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Integrated Software: the stakes are raised

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Microsc
PFS:Fi
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Enable/OA
Framework III
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MD2HD

REVIEWS

- Reflex 2.0 now with disk access capability
- Star adds colour to its XB24-15 printer
- Toshiba's T5200 laptop is a speed demon

PC PUBLISH!
compares Ventura and Pagemaker

PS/Tutor
Integrating Microsoft Works

Buyers' Guide
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FIRST LOOK

- Netware 386
- Windows utilities
- Lotus Release 2.2

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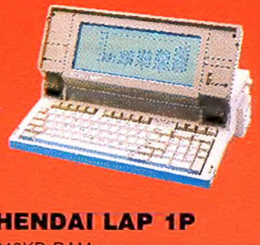

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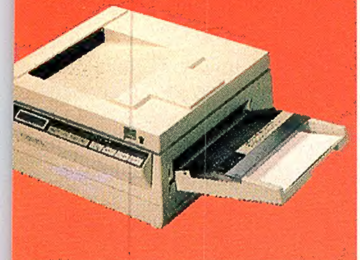

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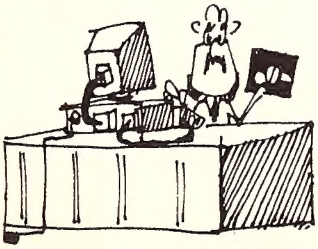

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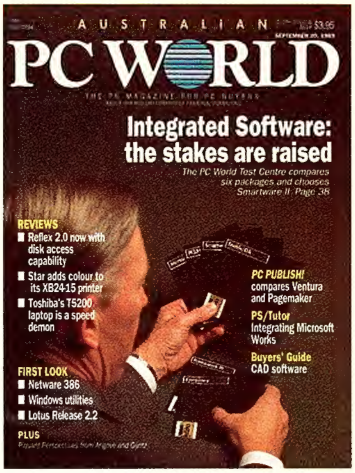

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PC WORLD CLASS AWARDS

See pages 128,129,130.

Yet another transition

PC World's editorial team, clockwise from top left: Ira Johnsen, Robert Thirlwell, Linda Kennedy, and Ileana Patrichi

The issue you now hold in your hands is a first for both Australian PC World and IDG Communications Pty Ltd — one completely done through electronic publishing methods.

As many of you readers know from experience, it's exciting implementing a new technology, but seldom does that implementation come off as smoothly as we'd like. Our editorial department uses a PC network, but our production department has installed Macintosh systems. When we are done putting the system together we expect it to be one of the more sophisticated publishing systems. In the meantime, we continue to bite the bullet.

As a result of our automation, a lot of people here put in a lot of effort over the past two weeks. Ta to all of them. On top of the ups and downs of implementing the system, the dreaded flu has been playing cruel jokes on us. Hats off to those who kept their sanity during our trials and tribulations. In keeping a very positive attitude, we can only think that, as time and experience on the system grows on us, we can only improve.

A special thanks to Mark Facchin, PC World's new art and design coordinator. He spent innumerable hours at the layout terminal and is also responsible for fine tuning our format. Come to think of it, those of us who were here also spent innumerable hours trying to get this issue out.

We'd also like to say goodbye to our associate editor, Ileana Patrichi, who is moving to bigger and better things as features editor with our sister publication, Computerworld. Congratulations! We'll miss you.

It's only appropriate that this issue contains PC Publish! This special report has a product comparison (in addition to our normal product comparison) between the two most popular PC desktop publishing software packages, Xerox Ventura and Aldus PageMaker. This detailed duel between the giants is necessary reading for anyone interested in desktop publishing. There is also an interesting article about colour printing, and the first column of a series providing hints and tips for Ventura users.

Our cover story, the product comparison as usual, is on integrated software. Our test centre put six different products through the IDG benchmarks and has come up with some very interesting results. We even look at two low-end packages, which although not as sophisticated as the "high-end power packages", offers many similiar features at a fraction of the cost.

In our reviews section, we take a close look at the Toshiba T5200 laptop. This is Toshiba's high-end 20MHz 386 machine, which has plenty of room for expansion (as far as laptops go), and a particularly readable gas plasma display. The T5200 has many desirable features: Our reviewer, Sherwin Levinson went so far as to describe the T5200 as being "unparalleled among laptop and portable computers we have tested".

Also reviewed in this issue is the flat file database from Borland, Reflex version 2.0. This has many new features, including a "virtual real time object-oriented memory manager" (VROOM). We did not think we would see the day when the words "virtual" and "real" would appear right next to one another in the same statement, but anything seems possible in the quest for memorable acronyms.

The Star XB 24-15 printer is reviewed also. It is a high-end dot matrix printer with a wide carriage, capable of printing in colour.

In First Looks, we examine Novell's Netware 386, Utilities for Windows, and Lotus 1-2-3 version 2.2, which can run with less memory than version 3.0.

Lastly, I'd like to say how encouraged the PC World editorial team is by the response from our readers. No, we're not going to use this space to pat ourselves on the back. What we're so pleased about is the increasing amount of input we've been receiving from you. It's not often that people take the time to write postive comments, but that is just about all we've received. In addition, we've had submissions for guest columns, quick tips and Star-Dot-Star. This interaction gives us a more personal relationship with our readers and we welcome it.

So keep those cards and letters coming in. Our door, er window, is always open.

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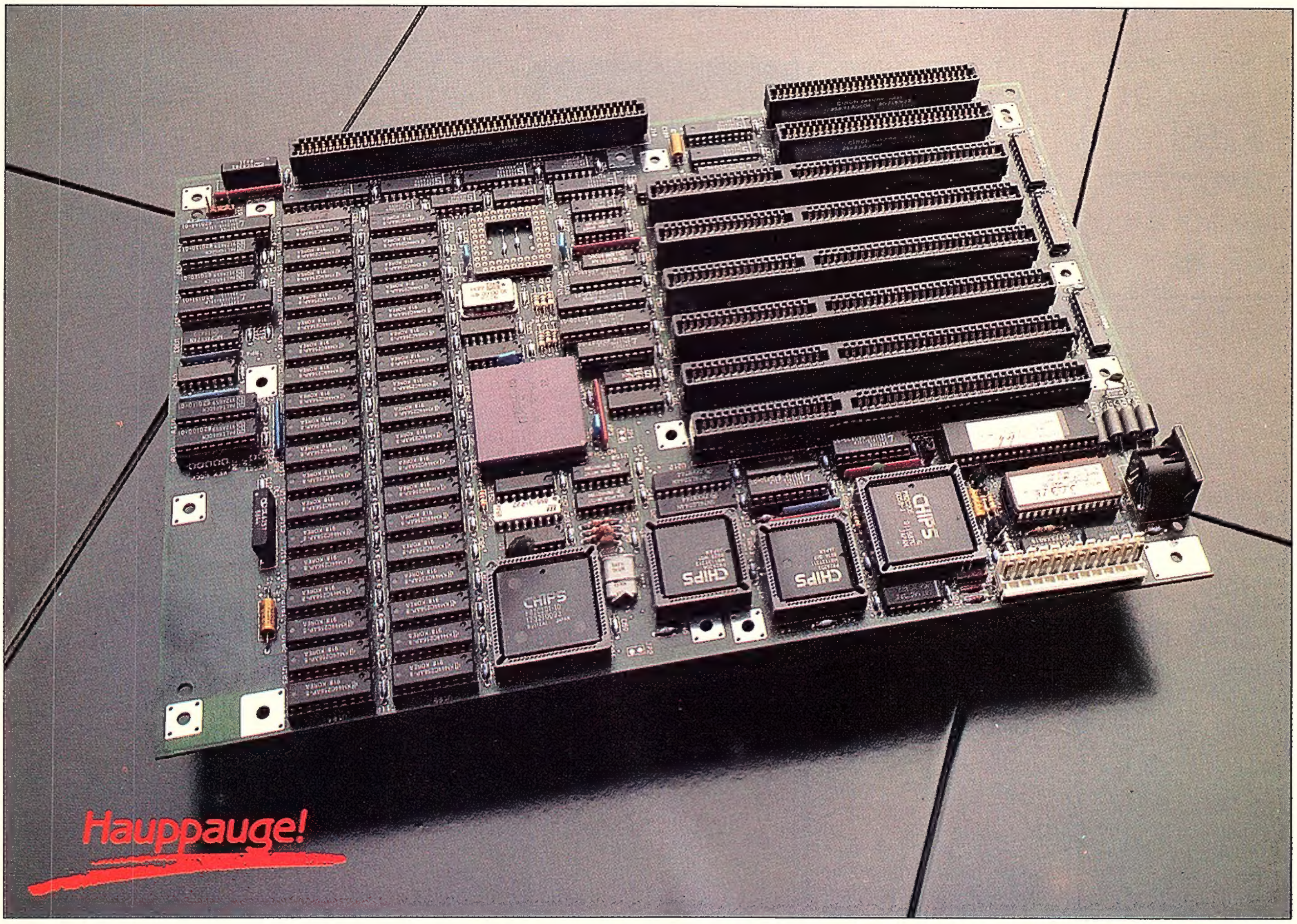

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PCW 20/9

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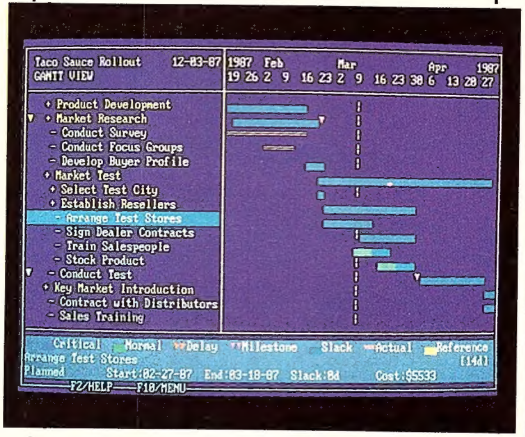

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Taco Sauce Rollout        12-03-87 1987  Feb            Mar                Apr        1987
GANTT VIEW                         19 26 2  9  16 23 2  9  16 23 30 6  13 20 27
  + Product Development
▼ + Market Research
    - Conduct Survey
    - Conduct Focus Groups
    - Develop Buyer Profile
  + Market Test
    + Select Test City
    + Establish Resellers
      - Arrange Test Stores
      - Sign Dealer Contracts
      - Train Salespeople
      - Stock Product
▼   - Conduct Test
  + Key Market Introduction
    - Contract with Distributors
    - Sales Training
    Critical   Normal  ▼▼Delay  ▼▼Milestone    Slack  ═Actual   Reference
Arrange Test Stores                                                    [14d]
Planned      Start:02-27-87  End:03-18-87  Slack:8d      Cost:$5533
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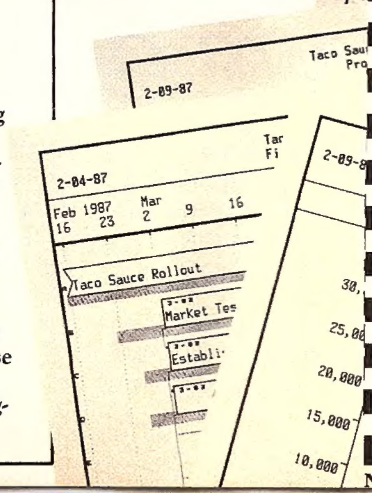

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Quick Tips: If you have any tips you'd like to pass on to PC World readers, send them to Quick Tips at the address below.

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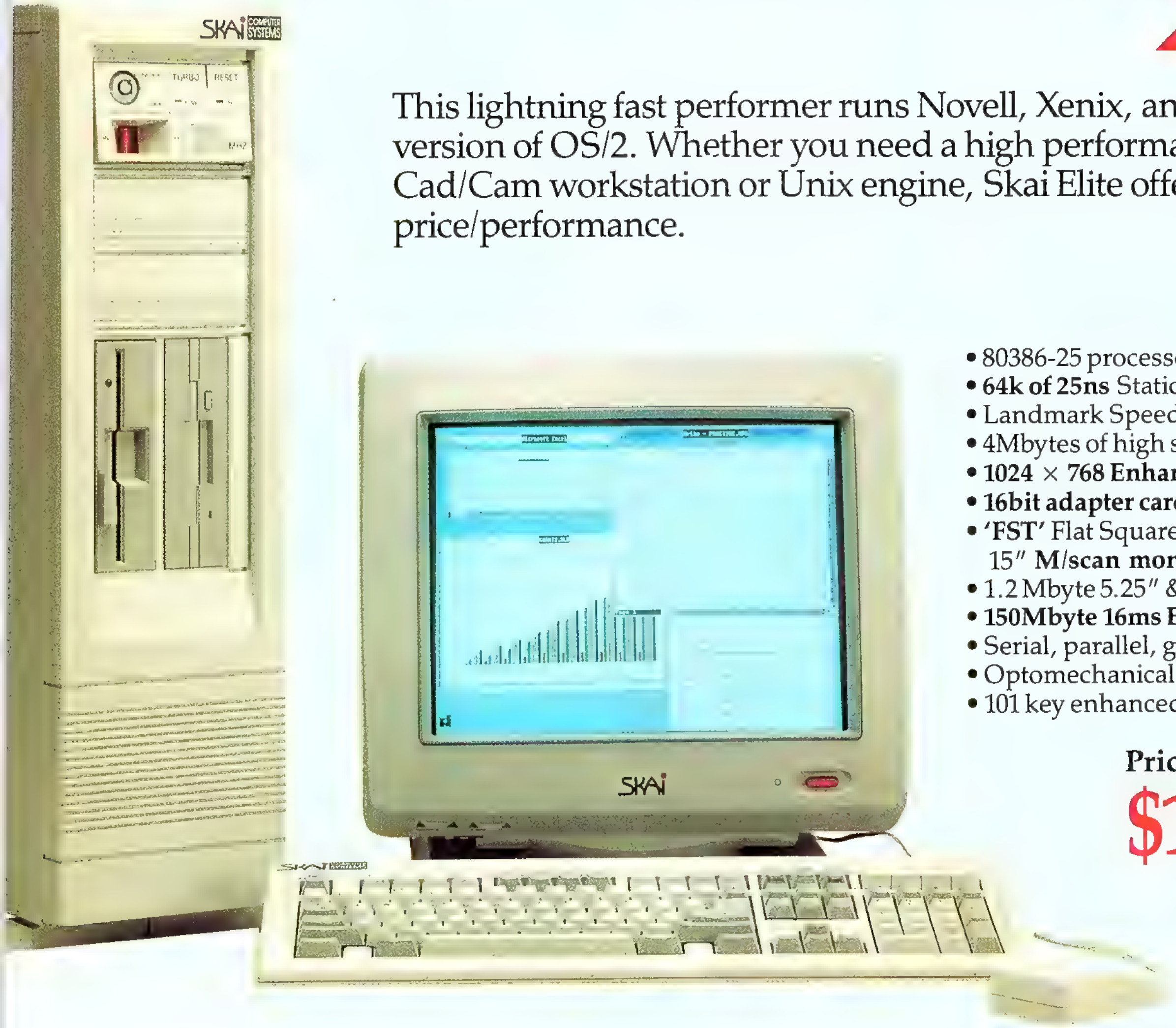

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Everex Step 386-25	48.18	13.68	24.17	5.87	5.20	$18,700
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The editors reserve the right to edit letters for length.

Please send to: Letters, PC World, 37-43 Alexander St, Crows Nest, NSW 2065

From: Philip Robertson
Glen Forrest, WA

One of my staff members has been receiving your excellent publication PC World for a period of approximately twelve months. During this time it has been read by many other members of the staff in our area. I have been one of them.

I have found the magazine to be a good mix of technical update, software update, application hardware and software reviews. The only area I could suggest any improvement for me would be more practical hints and tips in the use of application software.

Keep up the good work.

Editor's Note:

Many of our readers have asked for more practical hints and tips. With the recent changeover to magazine format, we have expanded our tips and techniques pages as readers have requested. We now publish more pages of helpful hints and tips than ever before.

From: Carol Ryan
Brisbane, Qld

I want to thank you for your very interesting and informative publication. I look forward to receiving it every fortnight.

I wanted to comment on the Viewpoint section which contains editorial or commentary type articles. These are the type of columns I would generally pass over, but I find the ones you print are very interesting.

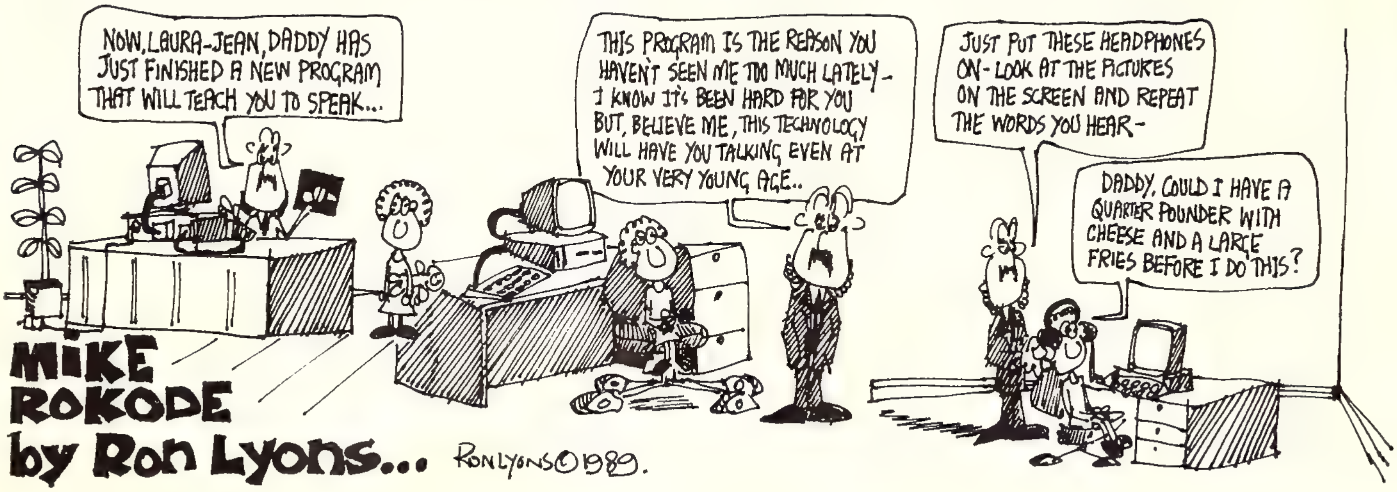
Sometimes, though, I feel I want to get something off my chest, or make my own comments about something happening in the industry. Why not let your readers write their "viewpoints" down on paper so the rest of us can see whether there are others who think the same way?

Keep up the good work. And, by the way, I think the move to A4 magazine was a good one. It makes the publication much easier to handle while travelling on the train or bus.

Editor's Note:

We have always encouraged readers to write down their viewpoints for publication. Since our transition to A4, we have begun to highlight what we call our "Guest Column". Keep an eye out for them. Our readers have some very interesting viewpoints relating to our industry. Details for submitting material for the Guest Column can be found on page 10. We also, of course, encourage letters relating to the publication itself, which is what this page is for. From our point of view, the more we hear from our readers the better.

NOTE: In the August 23 issue of *PC World,* our Product Update pages contained a piece on the Windows-based illustration package called Corel Draw, which has been upgraded. There are two distributors of the package, not one as listed. Webster & Associates is one of the distributors. They can be reached on (02) 975 1466. It has also been pointed out that in our July 10 issue, an announcement of a security product called PC-Argus Security System distributed by Codercard was shown as also being distributed by Queensland-based Skills & Solutions Pty Ltd. This company is not a distributor of the product but merely recommends the product when appropriate.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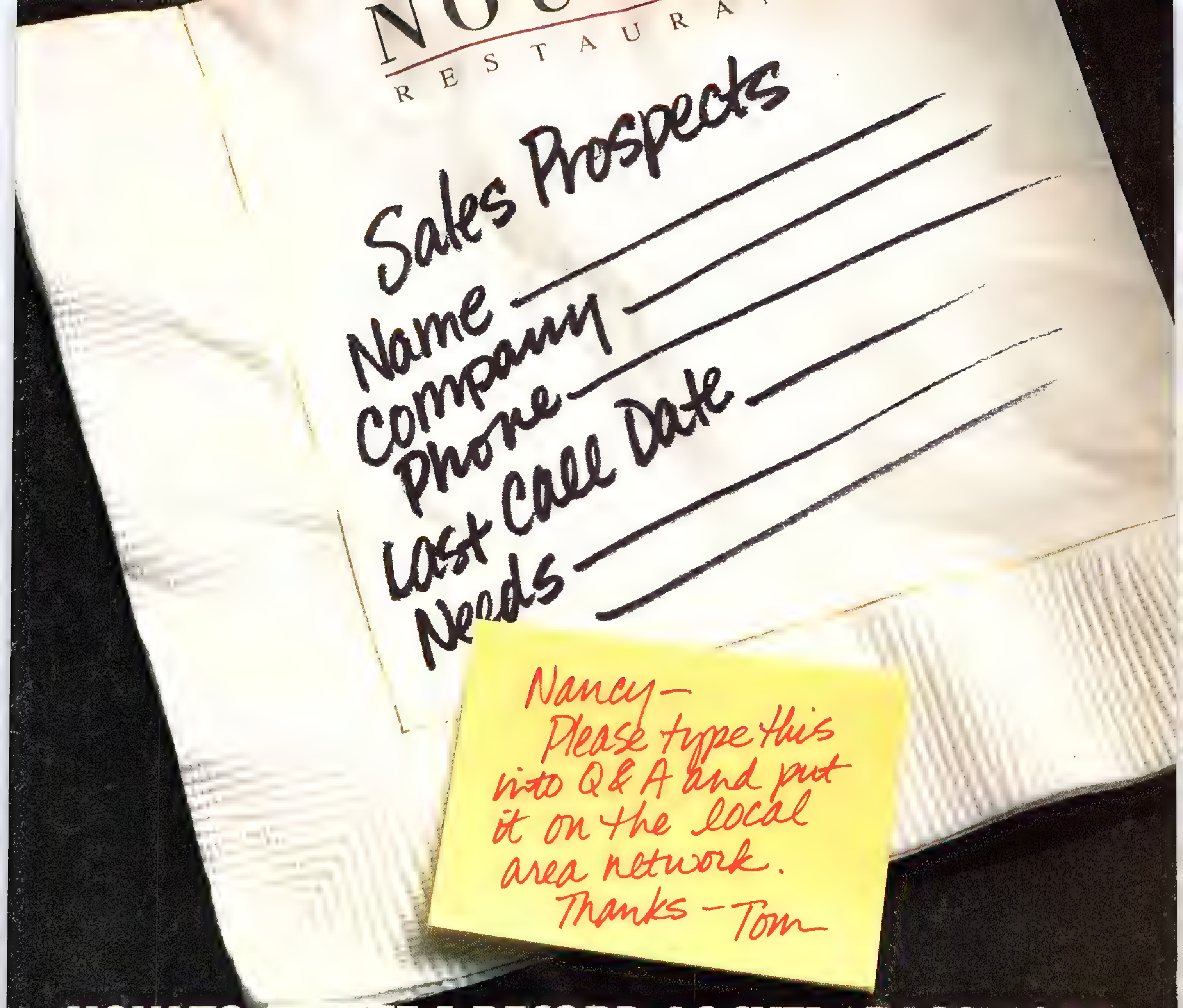
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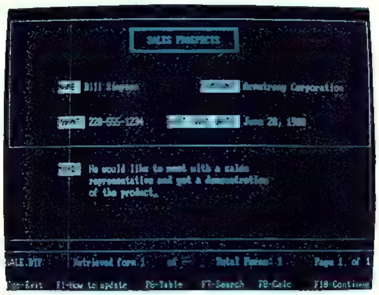
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NEWS

FRAMINGHAM, MASSACHUSETTS

Intel dispels rumours of delayed EISA bus launch

Despite rumours to the contrary, the Extended Industry Standard Architecture (EISA) bus is right on schedule, according to Intel Corp, manufacturers of the EISA chip set.

The so-called Gang of Nine EISA proponents banded together a year ago to introduce the EISA bus and at that time, predicted that PCs using EISA technology would be on the market by the end of this year. But some analysts and other industry observers have suggested recently that the EISA chip set would not be ready in time for a December launch.

"The rumour is out in the industry," conceded Kristin Bailey, a spokeswoman for Intel. "All I can tell you is that there is nothing true to the rumour at all."

The EISA chip set is fully functional and debugged and will be in production in September as scheduled, she said. Tests of chip set samples revealed only a short list of errata, requiring only minor modifications of the masks used in the fabrication of the chip sets, Bailey added.

Compaq will have EISA-bus PCs on the market at the end of the year, said Fred Cutler, director of strategic marketing at the firm. "That's right on the money," he said.

MELBOURNE

HP's New Wave automates and integrates, but lacks Agent

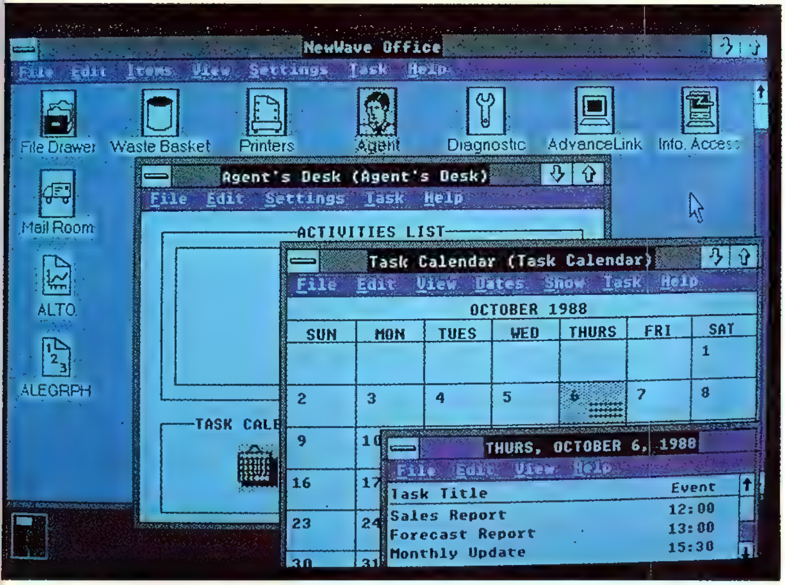
The first release of Hewlett-Packard's New Wave object-oriented personal computer environment will fit on top of MS Windows/286, which fits on DOS, and promises a barrage of facilities to combine applications to build fully integrated networked solutions. However, it will not have full use of its much-touted "Agent" facility, the company said.

The agent is intended as a facilitator that can automate repetitive tasks, such as logging on to remote computers.

But users will have to wait for the second release of New Wave, scheduled for the first quarter of 1990, before they see the agent features. That is because software for the agent was not tested in time for inclusion in the first release, the company said.

The first New Wave product, Release 1.0, will be available through Stein Systems in Western Australia. Les Stein, managing director of Stein Systems said it will sell for between $300 and $350.

Requirements are 3Mb of EMS 4.0, 1.2 Mb floppy disk drive, 40Mb hard disk, EGA or VGA monitor and card, MS-Windows supported mouse, MS-DOS 3.2 or 3.3 and Windows/286 2.11.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Task Title	Event
Sales Report	12:00
Forecast Report	13:00
Monthly Update	15:30

ARMONK, NEW YORK

IBM to boost PS/2 line with 486

IBM will attempt to strengthen the high end of its PS/2 line later this month when it announces its first 80486-based system along with a 33MHz 386-based system, according to sources.At the same time, IBM will announce the availability of OS/2 Standard Edition 1.2, which will ship by September 29. Sources within IBM also said to expect price cuts on existing PS/2s as well as "technology demonstrations" that will illustrate the power of the Micro Channel Architecture (MCA).

Called the Model 90 by several sources, the 25MHz 80486-based system will be positioned as a file-server product to be pitted against 80486-based EISA machines expected soon from several manufacturers.

The Model 90 will come standard with 4Mb of memory that can be expanded to 8Mb on the motherboard, an 80Mb hard disk, and a SCSI interface that can synchronously address up to four hard disks, according to sources.

The Model 75 will have a 33MHz processor with 2Mb of memory, expandable to 4Mb on the motherboard, and a 40Mb hard disk drive.

REDMOND, WASHINGTON

Similarity of Windows to PM 1.2 could reduce OS/2 sales

In a move that may undercut sales of OS/2, Microsoft has put a virtually identical look and feel on Windows 3.0 and OS/2 Presentation Manager 1.2 — so much so that users will barely see the difference.

OS/2 PM 1.2 is expected from IBM September 29. Windows 3.0 will be announced in November, according to beta testers of the programs.

A Microsoft beta version of 1.2 and the latest beta of Windows 3.0, which both went to testers recently, feature 3-D buttons and scroll bars, with an appearance very similar to OSF's Motif interface. These features are not in the latest IBM beta of 1.2 but are expected to be in the final version.

Proportional fonts — included in OS/2 1.1 — have been added to Windows 3.0.

In addition to the new interface features, Windows 3.0's most notable feature is its improved memory handling, supporting the 16-bit protected mode of the 386 and addressing 16Mb of RAM directly.

Some developers believe, however, the high degree of similarity between the two products will only confuse users about the real differences.

In addition to the 3-D buttons, Windows 3.0's Desktop Manager and the File Manager appear almost identical to OS/2 Presentation Manager 1.2.

While OS/2 PM 1.2 looks like Windows 3.0, it doesn't support Windows applications, a function expected in the OS/2 386 version expected mid-1990.

SYDNEY

NetWare 386 3.0 ships early

To the surprise of beta testers and industry insiders, Novell shipped this week its first copy of NetWare 386, Version 3.0 earlier than expected. It will be in Australia by the end of the month, through Novell distributors.

Early users will be limited to file and print service, however, with server-based applications and multiple protocol support not scheduled to appear until 1990.

NetWare 386 claims significant increases in performance and services over NetWare 286 SFT, Novell's previous top-end product. Improvements include 250 simultaneous users, 100,000 concurrent open files, and 32 terabytes (a terabyte is a thousand gigabytes) of disk storage.

Notably absent from this release is the Developers Workbench, based on the Watcom 386 C compiler and required to develop NetWare 386-specific applications, called NetWare Loadable Modules.

Novell plans to release Developers Workbench in the first quarter of 1990 when NetWare 386, Version 3.1 ships, the company said. Because development tools are missing, testers agree that NetWare 386's primary current value is for file and print sharing.

Users will have to wait for Version 3.1 for other NetWare 386 features like support for multiple transport protocols and interprocess communications like NetBIOS and Named Pipes. Version 3.0 supports only Novell's IPX protocol.

MENLO PARK, CALIFORNIA

Foxpro sheds dBase look & feel

Foxpro, Fox Software's answer to dBase IV, is getting high marks from beta testers for its rich interface and improvements on dBase features.

"David (Fulton, Fox's president) has given us the best of the graphical interface world without forcing us into using a graphical interface," one early user said. The interface offers a mix of point-and-shoot options and adds mouse support. Also new is support for a variety of display types and resolutions.

Besides database management functions, Foxpro provides a filer application, calculator, day/date calendar and a cut-and-paste utility for moving code among applications.

Early Foxpro users praised its capability of creating views or virtual tables, linking columns from different data tables, creating filtered indexes and allowing reports to recall different views at run time. Its improved memo fields automatically convert troublesome dBase IV memo files and fields still retain dBase III Plus file compatibility.

REDMOND, WASHINGTON

MS Windows to support extenders

Putting an end to speculation, Microsoft has said that it is working with vendors of DOS extenders to ensure programs written for their products work under future Windows versions.

In doing so, Windows will be capable of running applications like 1-2-3, Release 3.0 and AutoCAD, which were written to use extended memory.

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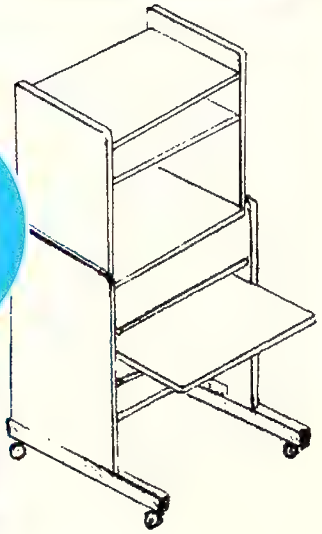
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SYDNEY

Client Server System from 3Com

3Com Corporation has released what the company claims is the first client server system developed by a networking company. The system 3+OpenCSS (Client Server System), consists of 3+Open LAN Manager software with Demand Protocol Architecture (DPA); a new network server based on an Intel 80386 processor (3Servers), and new network 286 diskless workstations (3Stations).

According to 3Com's founder and vice-president of marketing, Dr Robert Metcalf, client-server systems offer more flexibility than traditional terminal-to-host processing. With the client-server system, computation and presentation of data is divided among network devices best suited to the task. These devices can range from desktop workstations to servers to minicomputers and mainframes.

On a client-server system, processing of an SQL database or another computation-intensive application would take place on the server, rather than at the desktop workstation (client).

3+Open LAN Manager with the new DPA allows two things: More memory is made available within workstations to alleviate "RAM cram" when running DOS applications. Also, DPA allows users to download protocols into workstation memory as needed for applications running on connected resources with SNA, DECnet, TCP/IP and OSI. X.400 and X.25 connectivity protocols are also supported.

3+Open CSS comes in standard packages, consisting of the new 3Server/500 preloaded with 3+Open LAN Manager with DPA and the appropriate combinations of 3Stations. The components are also available separately.

3Com has established an office in Sydney to service Australia, New Zealand and the South Pacific. Imagineering will continue to distribute 3Com products:

Tel: (02) 697 8666.

SANTA CRUZ, CALIFORNIA

Intel 80586 to contain four million transistors

Intel's next-generation micro-processor, the Intel 80586, will contain four million transistors, which is four times the number of transistors contained in Intel's i486, according to David House, Intel senior vice-president, speaking before an audience of Unix developers at the SCO Forum '89 on the University of California at Santa Cruz campus.

"We will be shipping the (25MHz) i486 in quantity in October, sampling the 40MHz i486 in the fourth quarter, and will have the 50MHz version sampling by the end of 1990," House said. While the 33MHz version benchmarks at 20 VAX mips (VUPS), the 50MHz version is expected to perform at 30 VUPS, House added.

There will also be a second level of cache controller available for the i486 by mid-1990, according to House. "This will be used by large systems, such as Unix servers, to maintain cache coherency," he said.

By late 1995 or early 1996, the Intel i686 will appear, containing 22 million transistors, and by the year 2000, the 100-million transistor i786 will appear, running at 250MHz while occupying only one square inch, House predicted.

"By that time, we'll see four processor units on the chip functioning in parallel, with two more vector processing units in parallel," House said.

"A large number of transistors will be dedicated to self-test, and a large area of the chip will be reserved for human interface."

Those interfaces, according to House, will include both high-resolution graphics – well beyond VGA – and real-time full-motion video. House emphasised that in spite of the supercharged performance, the i786 will still be binary-compatible with software designed to run on today's 80X86 machines.

MENLO PARK, CALIFORNIA

IBM to give laptop market another try

IBM plans to re-enter the laptop market with a 386-based machine, an IBM executive said. Although emphasising that he was not announcing a new product, Douglas LeGrande, IBM marketing and services director of desktop systems, said IBM intends to participate in the laptop arena with a battery-powered 386-based PS/2.

"We do plan to participate in all growing segments (of the portable market), but want to make sure, as with the P70, that we have a first-class, fully capable PS/2 with top-of-the-line features," LeGrande said. "[This means] the best screen, a good hard file, a system based on the 386 chip and a battery that doesn't have to be recharged every half hour."

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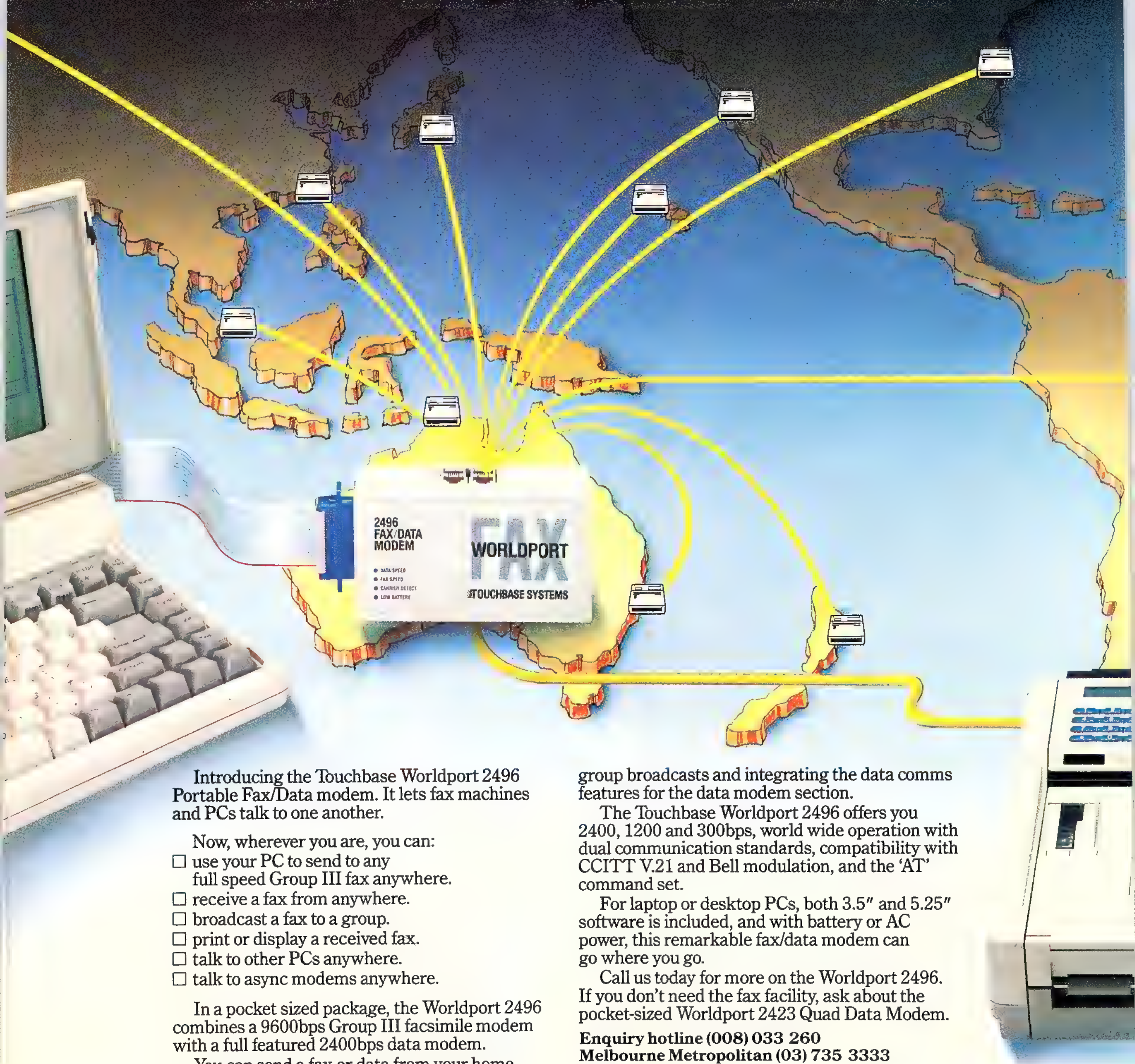

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SYDNEY

Toshiba expands range of laptops, printers

Toshiba has further expanded its range of laptops with four new models. They are a 386SX version of the popular T3200, a 40Mb hard disk version of the T1600, a 40Mb T3100e, and a 100Mb version of the T5100. According to Pamela Mills, Toshiba's product marketing manager for laptops, the expanded disk capacities offer users an increased choice.

"The 80386 40Mb T5100 has established an enviable reputation in business and government for its speed, power, portability and screen quality. The 100Mb version will enhance this reputation."

The T3200SX is Toshiba's first laptop based on the 80386SX chip. It runs at 16MHz, weighs 7.9kg, is mains powered, has a VGA gas plasma display and a 40Mb hard disk. It is priced at $8,399 and it has one full-length and one half-length expansion slot. The keyboard has separate cursor control and a numeric keypad.

Also announced was the release of Toshiba's low-end laser and dot matrix printers. The PageLaser 6 has HP LaserJet II and IBM ProPrinter XL24 emulations. It has two font cartridge slots, prints at six pages a minute, and is priced at $2,995 including tax. The dot matrix printer, known as EW300, has nine pins, weighs 6.5kg and is priced at $498.

Toshiba (Australia), Information Systems Division, (02) 887 3322.

Toshiba's new laptop range includes the T3200SX

SYDNEY

Ingres runs in 486 environment under Unix

Relational Technology has succeeded in running Ingres, its Relational Database Management System (RDBMS), in the Intel 80486 computing environment under Unix. Its next task is to port it to multiprocessor 80386 and 80486 Unix environments.

To do this Relational Technology and Corollary have signed a joint marketing and engineering agreement to optimise Ingres for Corollary's 386/smp (symmetrical multi-processing) operating system – a multiprocessing version of Unix based on SCO Xenix System V and SCO Unix System V/386 for micro-processing using multiple 80386 and 80486 processors, the company said.

Preliminary internal tests of Ingres running on a single processor 486 PC under SCO's Unix 3.2 operating system revealed performance enhancements of three to five times what it achieves on a standard 386 PC, the company said.

"We expect Ingres in Corollary's smp environment to exhibit the same linear performance improvements that previous multiprocessor versions of Ingres have indicated," said Alan Jervis, managing director of Relational Technology, Asia Pacific region.

He also said, "This performance improvement, enabled by Ingres' multiserver architecture, makes it the ideal RDBMS for multiprocessor 386 and 486 platforms of the future. We are committing a great deal of resources to our 386/486 Unix product line to take advantage of the leaps in technology that these platforms provide and to respond to the high customer demand we have seen for mainframe quality databases in the personal computer-style machines."

Ingres will be available for Corollary's 386/smp operating system in early 1990. Relational Technology will extend the agreement to include optimisation of Ingres for future 486 versions of Corollary's multi-processing operating system.

NORTH RYDE, NSW

Wyse cuts prices on some PCs

Wyse Technology Pty Ltd has reduced prices on several of its WYSEpc 286 and 386 personal computer models for its Australian and New Zealand markets.

Effective immediately, the suggested list price of the 25MHz IBM-compatible Wyse system 386 single diskette Model 3225-01 has been cut from $13,627 to $11,613; the WY2116-01 16MHZ 286-based system has been reduced from $4,328 to $3,403, and 12.5MHz entry level 286 single-diskette model WY2112-01 has dropped from $3,437 to $3,070. The recommended list price of the WY120 terminal has also been reduced from $1,065 to $906.

NEWS

MENLO PARK, CALIFORNIA

New version of LAN Manager has been shipped to OEMS

Responding to some of the advanced features promised by Novell's upcoming NetWare 386, an improved version of Microsoft's OS/2 LAN Manager was quietly shipped to OEMs in July and may bring users improved performance, security and new user interfaces by mid-September.

LAN Manager 1.01 brings improvements in four areas, including an increase of file handles from 255 to 32,000, according to Steve Kanzler, Microsoft product marketing manager. The new version will support up to 1,000 users, 2,000 sessions and 8,000 open files per server, Microsoft claimed.

Network administrators will be able to select one of three different shells for the server's user interface, including a Presentation Manager shell, a switching shell that lets users toggle between OS/2 and DOS sessions, and a "Min" shell that lets users run Netconsole as a secure process, Kanzler said.

The Min shell does not permit switching to a DOS window and thus may solve the potential security problem of an unauthorised person tampering with server files.

The non-Presentation Manager shells conserve a considerable amount of memory, Kanzler said.

Microsoft also shipped a slimmed-down IBM-compatible version of the Netbeui/DLC transport protocol for Token Ring networks. Internally called "Jetbeui", the protocol was cut from 90K to 30K, leaving more memory for user applications.

LAN Manager 1.01 fixes some mistakes made in the network operating system's original design, increasing performance for applications like SQL Server and AutoCAD, which are processor-intensive, according to sources close to Microsoft.

OS/2 LAN Manager Grows Up

	LAN Manager 1.0	LAN Manager 1.01
File handles	255	32,000
Users per server	128	1,000
Sessions per server	255	2,000

SOURCE: MICROSOFT CORP.

CAMBRIDGE, ENGLAND

Tapestry II network supports OS/2

Torus Systems Inc's Tapestry II Version 2.0 now supports OS/2 on both the file server and workstation, allowing all network server tasks to be installed on one OS/2 machine.

Previously, the minimum configuration for a Tapestry II LAN Manager network consisted of an eight-station network providing support for six users plus two servers, the Tapestry II domain manager and LAN manager. Workstations on the network can run under either DOS or OS/2.

The enhanced version also offers multitasking under OS/2. Previously, users had to exit from one application before entering another. Version 2.0 will be available in Australia in October at which time pricing will be confirmed, according to Sourceware.

CUPERTINO, CALIFORNIA

Mac portable lacks support for cards

Apple Computer Inc's upcoming portable Macintosh will not support current expansion cards, relying instead on developers to modify their adaptor cards or offer external devices, said US sources who have seen the machine.

The portable announcement, which will also include the unveiling of the 25MHz Macintosh IIci, is scheduled for September 20 in Los Angeles, but locally Apple would not confirm a release date for either machine.

The arrival of the portable will give the Mac world its fourth slot architecture, following on the heels of the announcement last autumn of the Mac SE/30, which uses the non-standard Direct Slot. The portable cannot support cards currently on the market because of its unique form factor, said a source within Apple. Instead it uses a processor-direct slot similar to that in the Mac SE/30 but which is only 16-bits wide.

SYDNEY

Wingz for Windows

Informix Software is developing a Windows version of its Wingz spreadsheet, now available for the Macintosh, and has finished but shelved its Presentation Manager version until a viable OS/2 market emerges, company officials said.

Cameron Esselmont, managing director of Informix Software in Australia, confirmed that Wingz for Motif and Next Step are also in development.

Also coming is a CL/1 add-on that will enable Wingz to both download and update large systems' databases other than those from Informix, which work directly through Wingz' Hyperscript technology.

The add-on will be available in Australia in the fourth quarter, according to Esselmont.

COMPUTER SHARK

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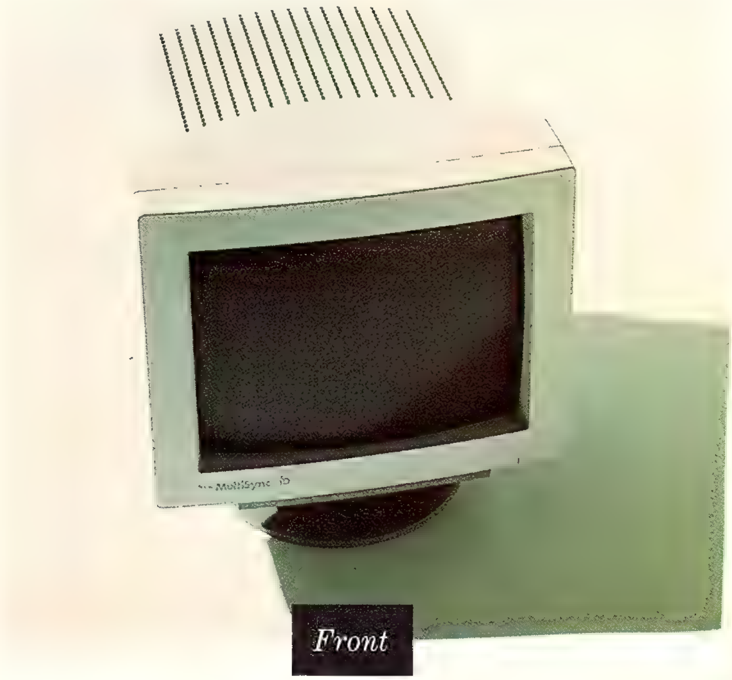
Some views on why the NEC Multi

There's a lot more to the new MultiSync 3D monitor from NEC than meets the eye. Because instead of making one monitor for each graphics board, we've developed a monitor that enhances the performance of the modes on practically *any* board.



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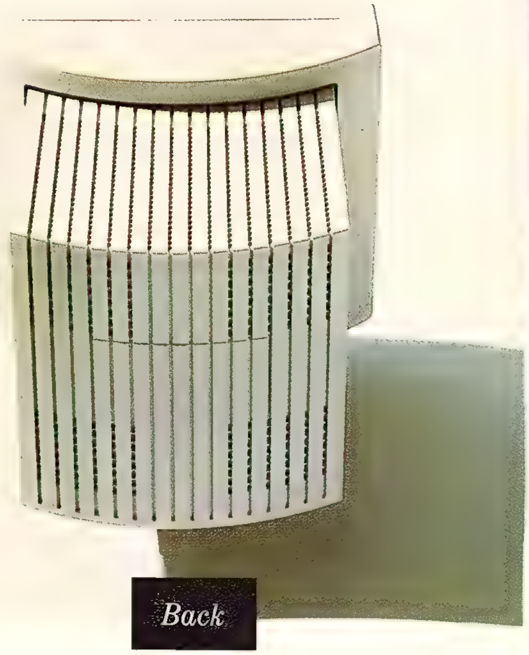

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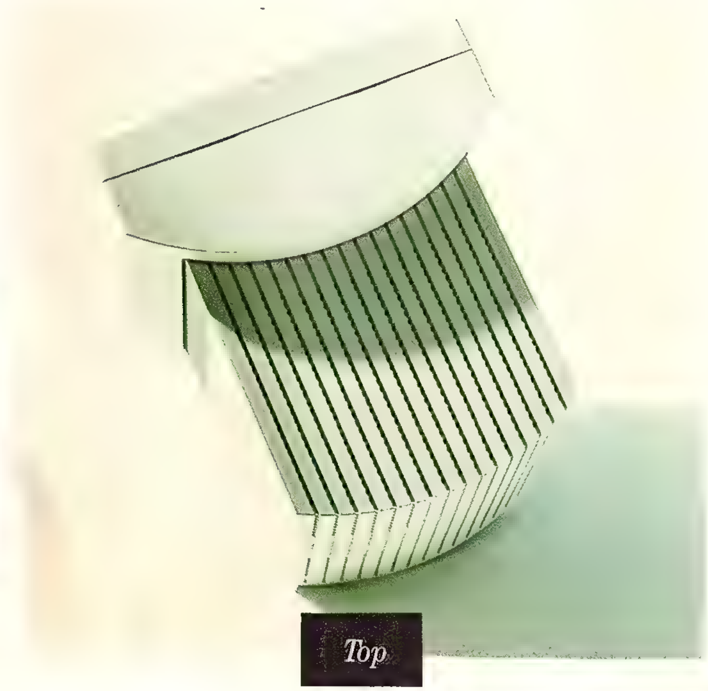

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GUEST COLUMN

By David Kilmartin

Are you security unconscious?

Australians imported $2.5 billion worth of information transfer equipment in 1988. This figure includes our number one import of $1.76 billion worth of computers.

These figures indicate the ever increasing reliance that we place on computers and related communication equipment. Take a typical business and discover the existence of a LAN or two, connections to an EDI network and an e-mail network, and perhaps a distributed operating system. There may even be leased data links between interstate offices. But has the security of the data been considered — Probably not, unless they are a bank or a defence industry supplier.

Take a moment to value the information stored in your computer system, and the information flowing around your LAN, your e-mail system and between your business partners via EDI.

What would be the implications if you could no longer guarantee its confidentiality or integrity? What if, in fact, your competitors, the government or the public had full access to it?

Think about these situations: an attacker being able to impersonate your EDI profile and circulate spurious messages? Your EDI and e-mail being stopped before their destinations without your knowledge? Users being able to deny having received your e-mail or EDI? Or simply your communications being changed between sender and receiver without either person detecting a change? Finally, your confidential e-mail discussions with colleagues are no longer confidential?

In short, your business could be sabotaged. These are problems facing both the users and the suppliers of such networks.

The solution to protecting your data exists in the form of cryptosystems employing data encryption/decryption algorithms. These algorithms operate on your files, electronic messages and EDI/EFT documents, converting them into representations that are meaningless to all parties other than the intended recipient. Some applications will require the whole of the data to be encrypted; whereas in EDI and other applications it is only necessary to encrypt a small piece of data which is a function of the entire data, and append this to the transmission. This appended code is called a Message Authentication Code (MAC) and can be used as the electronic equivalent of your signature.

Following the development of Smart Card technology in France, we are about to see our own mini-explosion here in Australia. These hybrid cards have the conventional magnetic stripe but also have a microprocessor imbedded which supports the above cryptologic functions. At least two major Australian banks have initial orders for Smart Card equipment which will be used, primarily, in EDI applications for message authentication.

Most readily available crypto-equipment uses the antiquated Data Encryption Standard (DES) released by the US in 1976! Although still a powerful tool, DES has met its match with today's super-computers. Still, no other algorithm has been accepted as its replacement, yet.

Started thinking now? Don't despair. Apparently not many of us have considered securing our data. Or we have and don't consider it worthwhile, yet. Even the standards organisations forgot about it; which is why OSI also equates to Open Security Invasions. The International Standards Organisation (ISO) is deciding on where to insert security measures within the seven-layer model. Our own Standards Association Of Australia (SAA) is also working on short- and long-term solutions.So for the moment, while the finance industry has well-defined EFT security standards (AS2805) the EDI/e-mail and LAN networks have nothing comparable.

All is not lost. It's not time to rush off and invent your own crypto-systems, although some background reading in secure communications and data encryption may be a good idea. The cryptology arena in Australia is starting to simmer; have you noticed the number of conferences and workshops happening which are related to secure communications?

As EDI and the use of computer networks mature, so will the need for secure communications. Then all users will demand extensive crypto-systems. The point is to become aware of the frailty of the security protecting perhaps your most valuable possessions. It may be time to develop a security policy because no matter how secure your computer system, it is void if not placed within a well-structured security policy for your business.

● ***David Kilmartin is doing research into cryptography for a major Australian company.***

By John Gantz

TECHSTREET

Prevent wiring entanglements with "satellite' infrared network

THIS has not been much of an industry for the inventions of widgets since the first Apples rolled off the line, the first mouse went into production, or maybe the Bernoulli Box was announced. No, ours is an industry where innovation shows up in engineering, marketing, distribution, or business relationships with the Taiwanese.

So when I do run across an honest-to-goodness widget, I tend to stop and marvel.

So let me tell you about Photolink from Photonics, a four-year-old US start-up company. It is a widget designed to replace computer cables in open offices. The idea is simple: Instead of sending electrical signals down LAN or computer terminal network cables, it uses infrared light waves travelling through the ambient atmosphere. Instead of having the light beams travel point to point by line of sight – which has been tried before with little success – they travel to a single spot on the wall or ceiling, from which they can be read by receivers sitting on the top of the office module walls.

Get it? It is a tiny communications satellite network, except there is no actual satellite. Uplink, reflection, downlink – all in a 70-foot radius within the room, using the same infrared spectrum as your television remote control beeper.

Now I cannot yet vouch for the technology itself, since Photolink "earthstations" – my term, not Photonics' – are being shipped this month. But I can tell you that there ought to be a market for anything that takes the wire-and-cabling hassle out of computing. If you have not had to install a LAN, or you are just an innocent user, you may have no idea of the trepidation with which those who do install them face the task. The general rules of thumb should give you some idea: While cable itself may be inexpensive, installation can be costly. The average data terminal moves at least once every 18 months and quite likely more often. The average building is totally rewired every 15 years. Every year about a third of all LAN nodes are moved. There are documented cases where LAN cabling costs more than $1,000 a node.

While Photolink will not solve all those problems, at least in open offices it can make moves and changes cheaper.

All right, you may argue with the economics in any general situation, but the fact is that anything that makes cable installation easier or eliminates it is right up there with apple pie in the goodness hierarchy.

There is another reason I am bullish – well, maybe intrigued is a better word. And that is Photonics, the vendor.

Founded in 1985 by Richard Allen, the Photolink inventor and the former general manager of NCR's Micrographics division and a VP of engineering for Memorex and Varian, the company managed to raise $US6 million last year from a number of blue-chip venture capital firms (including Apple Computer). The company's chairman is the former CEO of both Memorex and Collins Radio, former executive vice-president of Rockwell, and a corporate vice president for General Electric. The rest of the executive lineup is equally impressive.

So here is an engineer-turned-high-level-executive who during a 20-year career has observed this ratty problem of inside wiring. In fact, it is getting worse instead of better as the number of computer terminals and PCs increases from the hundreds of thousands to the hundreds of millions (almost) installed and with the majority of them yet to be put into networks. Something must have clicked in Allen's mind, so he leaped off the corporate ladder, which he had been climbing nicely, for the chance to get tangled in the wiring business and solve it once and for all.

During its first three years, the quest was for technology assessment and refinement, and not until Allen had settled on infrared over radio as a medium did he even go looking for money. And by the time he did, he had a prototype available to beam onto his kitchen ceiling.

Once the money was in, Allen went about turning the prototype into something that could be manufactured and shipped. The industrial designer was the same that worked on the Wyse terminal – these things had to look good since they would be sitting out there clipped to module walls. After that he started lining up distribution. One of the first beta sites: Apple.

The rollout plan is simple: AppleShare and RS-232 terminal network support in September, Token Ring and 3270 networks in 1990; and Ethernet in 1991.

Will Photolink catch on? I don't know for sure. I do know that once I had a remote control for my TV, I wondered how I lived without it; and once I had a wireless remote control, I could not imagine having the kind with a cord. So we will see. That is all you can do with aftermarket widgets like this.

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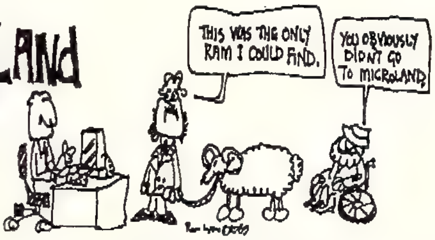
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OVERSTOCKED

UPFRONT

By Neville Angove

Malice in Blunderland

An acquaintance of mine — in the computer industry, real friends are quite rare — came to the conclusion that she had to extend the local-area network used by her company. What she needed was a diskless PC and a 120Mb file server to add to the Arcnet/Ethernet LAN already in place. She was wary of using the dealer who had sold the company the original setup, since this dealer had severely overcharged her employer, and as well showed a distinct unwillingness to support the accounting software purchased with the original network.

My advice was that she should find a dealer who could provide both machines required, supplying a well-known — but not necessarily the best known — brand name product, and who could also source the network adaptors and cables required. The idea of using a single dealer, and of purchasing a well-known brand name, was to reduce her support problems while still avoiding paying the excessive prices demanded by the highest profile manufacturers.

Her problem was that she could not find such a dealer. Either the diskless PC was the problem, or the correct capacity file server could only be provided if based on an 80386 processor (which was a little excessive for a four-node network), or the dealer could not source the correct adaptors, passive hub and co-axial cables. Basically, all the dealers she approached had adopted the attitude of most US dealers, in that they would only sell absolutely standard systems as supplied by their absolutely standard distributor, making no attempt to supply the actual products that this customer needed. In the end, my acquaintance was forced to resort to a clone distributor who was unaware of the fact that the customer was always wrong.

It is not so much the dealers' fault in this case, since they could only sell products provided by their distributors. Most felt that it was not acceptable to purchase a basic unit from a distributor, remove the unwanted disk drives and replace them with the desired capacity drives, and carry the cost of the components removed. The fault lies at the door of the distributors, in that they prefer to supply only a limited number of configurations, leaving the task of customising their systems in the hands of their dealers and third-party add-on specialists. It seems that the personal computer distributors are so eager to increase their market share by offering lower-priced but standardised systems that they ignore the fact that not all customers are "standard" and can cost-effectively use standard solutions.

At least my acquaintance was lucky in that she did not meet a dealer who tried to sell her a server with a three-speed disk drive, chrome plated memory chips, an unleaded petrol processor, an optional power cord, all in a choice of designer colours.

WHAT VIRUS?

The virus "problem" is still generating some noise among users, but for a variety of reasons. Recently, I was asked if I could write a virus program designed to wreak havoc on the system owned by the former programmer husband of a jilted wife. I declined the offer, but the request reinforced in my mind the notion that most so-called virus programs have probably been created and released for reasons malicious, and it has been a matter of luck — generally bad luck — that they have escaped from the system of the intended victims.

The truth is that most virus programs are not true examples of this concept, but just simple programs designed to damage the data of the user silly enough to let one into his system. They do not breed, nor do they generally seek access to other systems. But as I have written before, the fact that such an interesting concept has received substantial press coverage is enough reason for some twit to prove he can design such a virus.

HEADLINE CATCHER

While NEC may dominate the Japanese PC market, in Australia it is forced to compete against several other companies for this position. Survey results notwithstanding, in the PC-compatible market, NEC has Compaq, IBM and Amstrad to worry it. If Epson Australia is successful in gaining its desired market share, it will also be a worry for NEC.

The fact that NEC's Japanese competitors have joined together to support a common operating system interface for 32-bit PCs is of little concern to NEC's Australian user base, and is definitely not a potential source of concern. It will not affect the design of future NEC PCs, nor their availability (except that if NEC Japan supports the same common operating system interface, it might further improve its position in the Japanese market). NEC is doing extremely well, even to the point of building another microchip plant to meet the demand for its products.

It is unfortunate that some people will do anything for a catchy headline.

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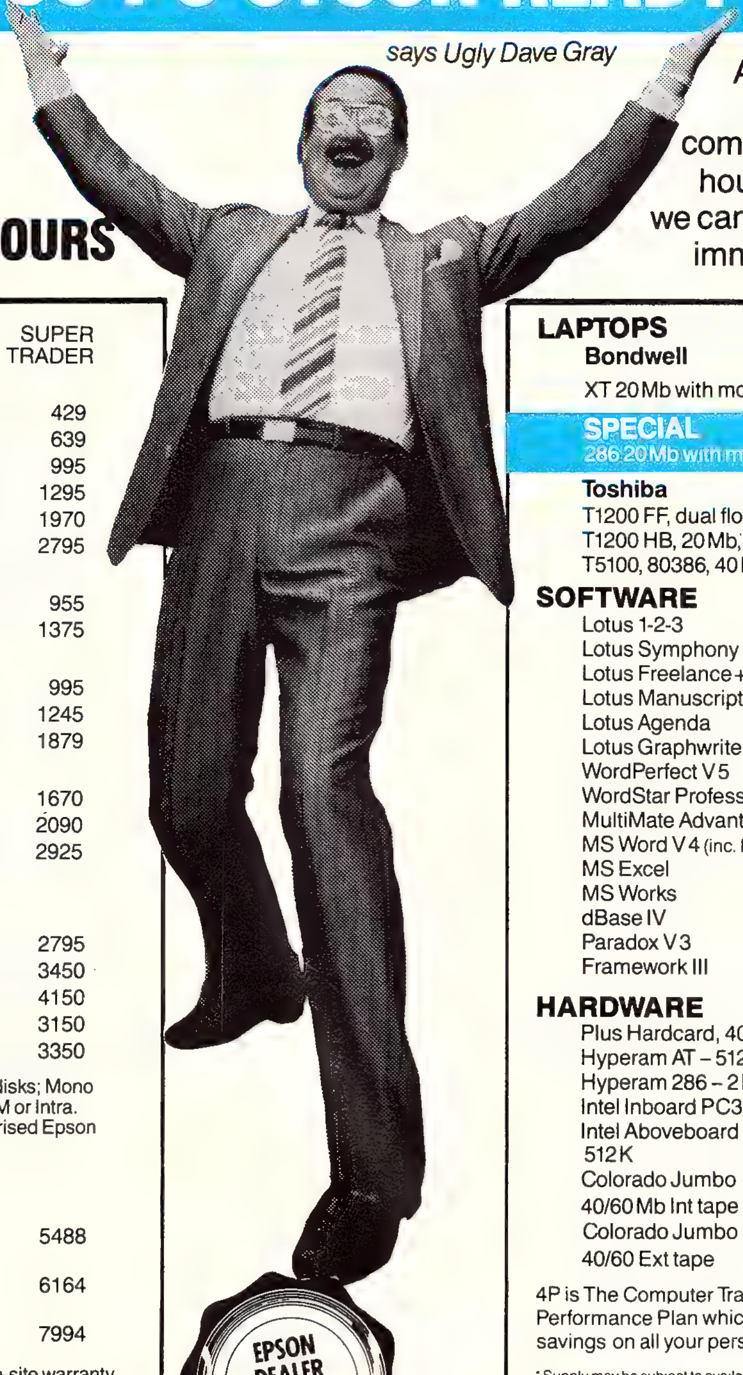
says Ugly Dave Gray



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Epson systems contain Miniscribe hard disks; Mono monitors are Eizo; color monitors are TVM or Intra. NOTE: The Computer Trader is an authorised Epson warranty service centre.

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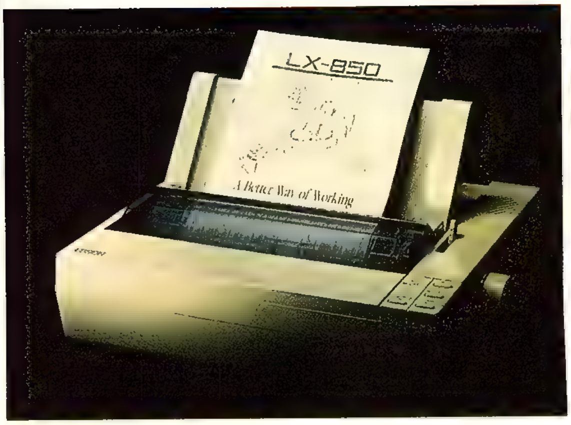

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EPSON LX-850

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The LX-850 is fully compatible with the Epson ESC/P commands and an optional *Eplink* interface allows connection to a range of Apple computers. Suggested list price for the printer is $612 (incl tax).

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SUNACCOUNT FIXED ASSET REGISTER

Multiple currency module

SunAccount Fixed Asset Register, a software system for maintaining multiple-currency fixed asset registers, has been released by Systems Union Pty Ltd as part of the SunSystems range which consists of SunAccount and SunBusiness.

The Fixed Assets Register allows users to record asset movements in different currencies and transfer the resulting financial transactions to the SunAccount Ledger Accounting module.

Available in single-currency version, the module offers flexible asset descriptions to reflect asset enhancements, disposals and divided locations.

Also released is SunQuery, a report generator that provides SunSystems users access to data in any SunSystems file.

The price of the SunAccount Fixed Assets is $1,680 for a single user version and $2,520 for a multi-user version. The SunQuery cost $800 for a single user version and $1,260 for a multi-user version.

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NETCOM CELLMODEM

Portable intelligent modem

NetComm (Australia) Pty Ltd has brought to Australia a portable, intelligent modem, designed to work over the cellular communications network. It can be used with Racal mobile and transportable cellular phones and a variety of other cellular phones to work over the cellular radio network. It will also work with PCs with an RS232 port.

It supports data standards which allow access to low speed data services at 300bps, through to VIATEL at 1200/75bps as well as AUSPAC and other databases at 1200bps full duplex.

It also includes an auto disconnect feature and an AT command setting. At a suggested retail price of $599, the package comes with the communication software, NetComm Program V3.0 for IBM PCs and compatibles.

NetComm (Australia) Pty Ltd
Tel: (02) 888 5533
Fax: (02) 887 2839

WORDPERFECT 4.2 FORAIX/UNIX/XENIX

Workstation version

WordPerfect Pacific has released WordPerfect 4.2 for the IBM RT workstation, IBM's version of the UNIX operating system, AIX. It offers the same features as the DOS-based version of the program and supports a wide range of terminals and printers.

Files created in AIX/Unix/Xenix program are compatible with those generated on other systems including IBM PC, Atari, Commodore Amiga and Apple. The program sells for $2,750

WordPerfect Pacific
Tel: (02) 498 7155
Fax: (02) 498 2033

MACSTACK 150

150Mb tape system for Macs

Domino Computers Pty Ltd, the Australian distributor of CMS Enhancements storage devices, has introduced a 150Mb version of its 1/4in cartridge tape backup subsystem for all Apple Macintosh systems.

The TS 150/E "MacStack Tape" features a transfer speed of 116K bps and has a SCSI interface. Recommended retail prices for the TS 150/E with a 150Mb cartridge is $3,785 (incl tax).

Domino Computers Pty Ltd
Tel: (02) 436 2733
Fax: (02) 439 8112

RADIUS TWO PAGE DISPLAY RADIUS FULL PAGE DISPLAY

DTP displays for Mac SE/30

InfoMagic Australia Pty Ltd has announced the availability of two display systems for the Macintosh SE/30 from Radius. The Radius Two-Page Display System consists of the Display and TPD-SE/30 Video interface, priced at $3,241 and $1,311 respectively. It has a 19in monochrome screen and a resolution of 1152 x 882 pixels. The 11 x 17in workspace allows the display of either two pages or a B-sized drawing. The case features a tilt/swivel base and front controls.

Series I
Premium
Binoculars
radius

SE/30 and colour monitor

The Radius Full-Page Display is a 15in monitor and FPD-SE/30 Video Interface. It will display a full 8 12 x 11in page without reducing or scrolling. It features a 640 x 864 resolution and 77dpi (dots per inch).

RadiusWare SE/30, the company's proprietary system software included with the Video interface, provides tear-off menus, screen saver, wide display option, enlarged menu font, screen capture and cursor locator.

InfoMagic Australia Pty Ltd
Tel: (02) 975 1044
Fax: (02) 975 1350

MACINTOSH LEARNING SERIES

Self-paced Mac software training

Apple Computer Australia has announced the Macintosh Learning Series (MLS), a collection of self-paced training modules. Each module is priced at $100 and includes an audio cassette, practice exercises on disk and a summary/reference card.

The MLS includes 40 titles covering a range of software packages including: HyperCard, Word, Excel, Works, Page-Maker, Aldus Persuasion, Adobe Illustrator 88 and Claris File Maker II and an introduction to the Macintosh computer.

Apple Computer Australia Pty Ltd
Tel: (02) 452 8000
Fax: (02) 452 8160

BABY APPLICATION SYSTEM

AS/400 to run on high-end PCs

TeleSystems Pty Ltd has announced the first product in a series of three software releases from California Software Products, Inc (CSPI). BABY Application System (Baby/AS) was designed to replicate the enhanced RPG environment of the AS/400 on a PC.

Apart from offering AS/400 screens and command keys for all modules, CSPI has included the AS/400 file utility (DFU/400), Program Development Manager (PDM) and Source Entry Utility (SEU/400). A new high speed RPG compiler and full support for new operations such as CALL, PLIST, PARM, RETURN, and FREE have been added as well.

The first phase will be available in the fourth quarter of 1989 and phase two and three are to be released in the first quarter and fourth of 1990 respectively. Prices for the BABY/AS are expected to begin at $800 for a stand alone, $12,000 for networks, and range upward incrementally.

TeleSystems Pty Ltd
Tel: (02) 819 6322
Fax: (02) 819 7375

HYPERPAD

Push-button computing

Technical Imports Australia has released HyperPAD, a complete desktop management environment that includes applications and utilities for IBM, Compaq and compatible PCs.

Features include in-formation-filled fields and buttons that can be moved, cut and pasted, as well as PADtalk and object-oriented, HyperTalk-like scripting lang-uage. Personal ap-plication designs of *pads*, can be created as well as custom databases, interactive tutorials, corporate PC interfaces and other applications.

Priced at $150, HyperPAD comes with more than 24 pads including DOS manager, daily, monthly and yearly calendar, phone/address, index card, HyperPAD help, tutorial and expense tracking.

Technical Imports Australia
Tel: (02) 922 6833
Fax: (02) 925 0311

SKAI ATTACHE SERIES

Don't buy a laptop until you've read the fine print

Most laptops look alike but with Skai's new Attache Series the difference is clearly visible. Skai's portable PC's are laps ahead of the rest • High resolution paper white screens give you incredible display quality • Battery power lets you work anywhere you want to • Don't sacrifice performance for portability • Skai's Attaches give you both.

12MHz – Ultimate portability

16MHz – VGA Display

SKAI Attache 286-12

- Power through your work with a lightning fast 80286 processor running at 12 MHz with 640k Dos & 384k EMS memory (upgradeable to 5Mbytes).
- Super fast 25ms Voice Coil hard disk means you won't wait for data to load.
- 1.44Mbyte & 720k formats are supported by the inbuilt 3.5" floppy disk drive.
- To prevent damage or loss of data, AutoPark™ locks your hard disk whenever you turn the power off.
- Std I/O ports for modems, monitor, mouse & printer.
- HiRes 640 × 400 backlight reversible LCD display ensures wide viewing angle; essential for that important client demonstration.
- Std, Quick charge Ni-cad batteries guarantee your Attache is ready when you are, and, when the power runs low, warning lights advise you.
- Both the LCD & H/disk can be programmed to automatically turn off after a user defined period.
- Tiny 324 × 343 × 80mm footprint and a total weight of only 5.9Kg means this laptop goes wherever and whenever you go.

$5,495 inc.

SKAI Attache 286-16

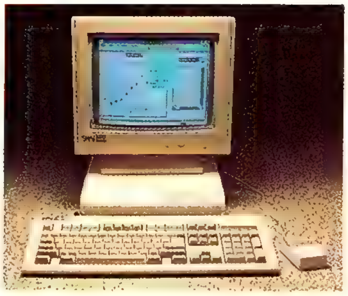
- Superfast 16MHz zero wait state processing power crushes processing time.
- Industry acclaimed VGA resolution with 8 grey shades; a large high definition LCD screen shows you the true picture.
- Support an external high resolution monitor with modes up to 800 × 600 for your favourite application.
- Lotus, MS Windows and other packages run effortlessly with 640k Dos & 384k EMS memory (upgradeable to 5Mybtes).
- Hard disk storage of 40 Mbytes with 25ms access time, matched to a super fast controller gets you information fast.
- AutoPark™ locks your hard disk whenever you turn the power off ensuring that your data remains safe and sound.
- 1.44Mbyte & 720k formats are supported by the inbuilt 3.5" floppy disk drive.
- A standard expansion slot gives you versatility. Expand your Attache 16 or connect to your favourite LAN.
- Power and portability in a Japanese laptop doesn't have to cost the world.

$6,295 inc.

SKAI Deskpak

14" MultiScan monitor, 101 key enhanced keyboard, Opto-mechanical mouse puts your Attache Laptop at the heart of an office system.

$1,195 inc.



SKAI
COMPUTER SYSTEMS PTY. LTD.
A Member of the Porchester Group of Companies

SKAI COMPUTER SYSTEMS. Corporate Sales Office: Porchester House, 276-290 St. Kilda Rd., St. Kilda, Vic. 3182. Australia. Ring Debbie Dean on (03) 537 2722 for the name of your nearest approved dealer. Country and interstate calls 008 334 015. Dealers please contact Porchester Computers. Phone: (03) 537 2722. Facsimile: (03) 537 2490.

Skai reserve the right to alter specifications and price without notice.

MAILBOX

Mail management made easy

Softcover Software Pty Ltd has introduced a program specifically designed for the management of names, addresses, letter writing and labelling. The program includes the ability to select by groups a data library. For every individual on a personal or personnel file, an information card can be created which allows the user to recall selectively in order the names and addresses of any category or group for lists, letters and labels.

MAILBOX
PLUS TUTORIAL

Letters can be written using a built in word processor and data can be printed in a number of formats.

The $199 program requires 256K of memory and can be used with either a monochrome or colour monitor and any printer, according to the company.

Softcover Software Pty Ltd
Tel: (02) 957 4010
Fax: (02) 929 7198

.SYMMETRY IV

dBase dictionary and documentor

Symmetry Software Australia has launched Symmetry IV, a development environment for dBase, Clipper or Foxbase users and programmers. The $299 package features: a Data Dictionary which documents systems down to the field level; documentor and debugger; a customisable professional editor and a stand-alone quick indent utility.

The documentor and debugger offer features such as database and index analysis, system file analysis, database and index matching, and graphic representation for system structure.

Symmetry Software Australia
Tel: (02) 439 1539

APPCOM SOFTWARE SYSTEM

Embedding Computing system

DGE Systems Pty Ltd has released Appcom software system from the UK based company Hexatron. The system fully supports the single Eurocard PC-compatible computer (ECPC), from DSP Design, and allows programs compiled on the ECPC to be "rommed" in the ECPC or its target system SV25, allowing engineers to use PC-based data compilers, while not restricting them to PC-compatible hardware.

The development package retails for $1,800.

DGE Systems Pty Ltd
Tel: (02) 412 1533
Fax: (02) 412 3491

TRAXVIEW

Electronic CAD productivity tool

Protel Technology Pty Ltd, a developer of Printed Circuit Board/Computer-Aided-Design (PCB/CAD) products, has added Traxview to its line of electronic CAD software.

Traxview is a Gerber format file productivity tool with full viewing and advanced editing facilities that give the professional designer complete control over their files, according to the company.

A panelisation program is included which allows the user to place multiple Gerber format files on the same film. The program also allows the placing, deleting and moving of Gerber format files. Specified files can be scanned and sizes automatically stored. A zooming facility is included. Traxview is available now for $495.

Protel Technology Pty Ltd
Tel: (6102) 73 0100
Fax: (002) 73 1871

FRAMEWORK III VERSION 1.1
FULL IMPACT VERSION 1.1
FULLWRITE PROFESSIONAL VERSION 1.1

Ashton-Tate updates

Ashton-Tate has updated Framework III, Full Impact and FullWrite Professional which are available from MicroAustralia free of charge to registered users of the current releases of these products.

Version 1.1 of Framework III features more efficient memory handling. Full Impact Version 1.1, the Macintosh spreadsheet, includes XMacro capabilities giving added functionality for creating new macro functions, features, menus and commands. Users can access and run external programs in C and Pascal.

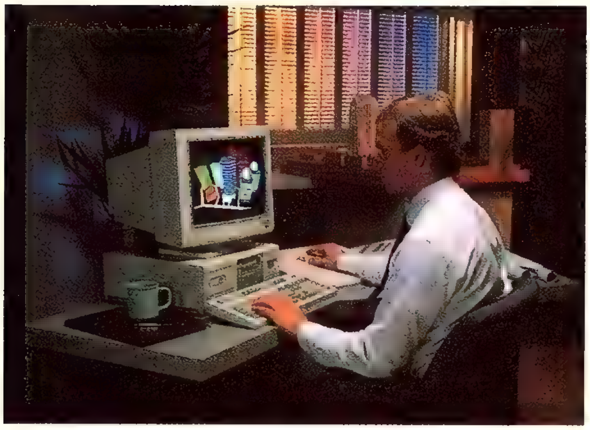
The new version of the Macintosh word processor, FullWrite Professional, includes the use of multi-lingual dictionaries and provides improved performance in low-memory situations.

MicroAustralia
Tel: (02) 736 3299
Fax: (02) 733 663

COLOUR PIX

Advanced Graphics System

The Compaq Advanced Graphics System for use with Compaq 286- and 386-based computers has been released by CCA Systems Pty Ltd, the Australian subsidiary of Compaq Computer Corp. The system, for use with high-resolution graphics such as CAD/CAE, is made up of the Advanced Graphics 1024 Board and the Advanced Graphics Colour Monitor.



The monitor supports up to 256 simultaneous on-screen colours with a resolution of 1024 x 768 on a 16in non-interlaced display. It is priced at $3,195 (ex tax).

The 1024 board provides support for eight- or 16-bit modes and features 16 colours out of a 16.7 million palette. It includes software drivers that support AutoCAD and Microsoft Windows 286 and 386. The board, priced at $2,395 (ex tax), is also compatible with a variety of monitors from other manufacturers. An optional memory board for $995 (ex tax) provides 256 simultaneous on-screen colours at 1024 x 768 resolution for displaying shaded 3-D images.

CCA Systems Pty Ltd
Tel: (02) 660 0077
Fax: 902) 660 3120

PC SECURITY

Virusafe, Logsafe and Totalsafe

Australian Computer Resource Centre (ACRC), appointed sole distributor for the Israeli company Elaishim, has released a range of PC security products including Virusafe, Logsafe and Totalsafe. The $99 Virusafe is a memory resident program, which displays a warning on the screen whenever it detects an abnormal occurence. The program can then be locked to prevent further damage and the Program Integrity Check (PIC) marks the executable programs and checks each program for changes each time the computer is turned on. Logsafe, priced at $399, is a PC security and audit system which contains a plug-in card that enables a log-in procedures at power-on. Access to the computer can only be gained with an ID number and a password which is crossed checked with a personal and non-reproducible key diskette. Including hardware the product sells for $476. Totalsafe, priced at $399, which includes Logsafe and Virusafe, is a plug-in device that contains several types of security systems including: boot protection; security controls and data encryption.

Australian Computer Resource Centre
Tel: (03) 521 2222
Fax: (03) 521 2221

MACRECORDER 2.0 TIMBUKTU 3.0

Farallon Mac products upgraded

Netcomm (Australia) Pty Ltd has announced the latest version of Farallon's MacRecorder Sound System, an integrated hardware and software package that records, edits, and plays live or recorded sounds on Macintosh computers. The company has also released Version 3.0 of Timbuktu Farallon's network application that allows two or more users to share screens over AppleTalk networks.

Version 2.0 of MacRecorder features advanced interactive multimedia support through the new HyperSound Toolkit, according to the company. Users can now build interactive HyperCard sound stacks that record and play sampled and compressed sounds from any HyperCard stack.

Components include the MacRecorder sound digitiser with built-in microphone, HyperSound, the Toolkit and SoundEdit. The system is available from NetComm at a suggested retail price of $399 (incl tax).

The new release of Timbuktu incorporates the ability to transfer files over a local-area network. It is priced at $199 (incl tax).

Upgrades for both products are $59 for registered users. Purchasers after January 15, 1989 can receive free upgrades with proof of purchase.

NetComm (Australia) Pty Ltd
Tel: (02) 888 5533
Fax: (02) 887 2839

COMMODORE PC 30-111

AT for XT price

Commodore Business Machines has announced an IBM AT-compatible with paper-white monitor, auto EGA graphics card and MS-DOS 3.3 for $2,699. The PC 30-111 features an 80286 processor running at 6-, 8- or 12MHz and includes both a 30Mb hard disk and 1.4Mb (3½in) floppy drive.

The machine also includes four expansion slots, builtin mouse support and the company's "Autoconfig" feature, which automatically configures the on-board peripherals.

Commodore Business Machines Pty Ltd
Tel: (02) 906 5088
Fax: (02) 906 4893

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SYNCOMP
4 Wetherill Street,
Silverwater, N.S.W. 2141 Australia
Telephone: 748 4777. Fax: 748 4828

PRODUCT COMPARISON

Integrated Software: The stakes

Smartware II
PFS:First Choi
Microso
Enable/OA
Symphony

are raised

By Alan Zeichick

Convenience and saved time, work, and effort are the promises of integrated software.

The antithesis of stand-alone packages, integrated software delivers a collection of applications based upon a common user interface and shareable data.

In its most common form, the integrated product includes a word processor, a spreadsheet, and some form of database. Many packages add telecommunications, presentation graphics, and outline modules. Comprehensive products throw in desktop accessories such as calculators, calendars, DOS shells, and other utilities.

INTEGRATION FRUSTRATION. Even when stand-alone products are from the same vendor, it can be frustrating trying to move information between applications or simply trying to remember which key to press to call up the menu. That is why integrated packages appeal to many users, particularly novices. Using an integrated product saves you the headache of trying to move data in a Brand X word processor to a Brand Y spreadsheet. And because the integrated package is a single product from a single vendor, training, support, and upgrades also are made simpler.

POWER UP. If you are just as interested in power and features as you are in integration, you may worry that using an integrated product instead of a stand-alone package will compromise your data processing needs.

You may still find yourself stuck with a less-than-robust spreadsheet because you chose an integrated package for its top-of-the-line word processor. However, integrated packages are coming closer than ever to earning their keep. Integrated software environments available today offer considerable flexibility and power, while taking integration a step further in data interchangeability and user friendliness.

SIX LEADERS. The integrated products we review in this Product Comparison can be separated into two distinct groups: high-end power packages averaging about $1,100 each, and low-end convenience packages at under $300. (Products were chosen based on the level of interest indicated in a survey of 1,000 readers.)

The professional-class products are Enable/OA, Framework III, Smartware II, and Symphony: These software behemoths offer a greater range of features and are more appropriate for users who intend to create complex documents, keep track of lots of data, and perform heavy-duty number crunching.

The personal category includes PFS:First Choice and Microsoft Works. They are more appropriate for lighter word processing, spreadsheet, and database-management needs.

While we grade the strengths and weaknesses of each product's individual modules, we look at how well they work together. Integrated packages are meant for just that — integration. This quality figures just as prominently as the stand-alone features users traditionally look for.

ENABLE/OA

VERSION 3.0

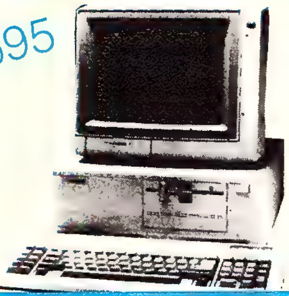
Enable/OA (Office Automation) is a high-powered integrated package reminiscent of minicomputer and mainframe office-automation software. Popular with government and educational departments, Enable/OA is chock-full of advanced features like three-dimensional spreadsheets, automatic tables of contents, and relational database capability. But using Enable/OA sometimes is like killing a mosquito with a cannon; in many cases a user-friendly fly-swatter would suffice.

It should be noted from the start that the testing for Enable was performed at our California Test Centre using the US version. In Australia, Enable/OA has been modified somewhat. We have tried to point out the differences as they come up, but due to the rush to get this information to press, we were unable to actually put the Australian version through our benchmarks. Enable/OA has the usual spreadsheet, word processor, database, communications, and graphics components. What is unusual are the modules' power and completeness. But instead of an integrated software package, Enable/OA resembles a set of stand-alone applications tied together with a common Help key.

Every application has its own menu design, style, and nuances. The user interface is complex and largely unintuitive. In the word processor, you use pull-down menus; in the spreadsheet, Lotus 1-2-3-style command menus; and in the database, a square table of options. In some cases, you will see the same options in each module but presented differently. A myriad of high-speed shortcuts bypass the menu structure entirely.

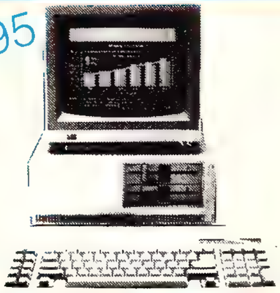
Performance: Enable/OA's spreadsheet uses slash-bar command menus resembling those in 1-2-3. It is file compatible with 1-2-3, and uses plenty of @ functions like those in 1-2-3. But Enable/ OA goes further, offering a three-dimensional spreadsheet that gives the program a worksheet measuring 1,024 columns by 9,999

$1695



TURBOMATE XT/10

$2295



TURBOMATE 286/12

$3995

TURBOMATE 386/20

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BROTHER 1209
168cps, 80 col.

$390

TURBOMATE 286/16
40Mb, EGA

$3395

BROTHER 1818L
18pm, 360cps

$750

CIPHER 60Mb Ext
Tape Backup Unit

$1295

CGA COLOUR
Monitor 14″

$375

MS MOUSE
(Bus or Serial)

$195

MONO VGA
Monitor 14″

$195

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HARDWARE

PRINTERS

Brother 1209	**$390**
Brother 1709	**$795**
Brother 1224L	**$595**
Brother 1724L	**$1125**
Brother Laser HL8 1 Mb, 300 cpi	**$3895**

DISK DRIVES

20 Mb West Digital	**$385**
40 Mb Miniscribe	**$545**
40 Mb V/C	**$495**
70 Mb V/C	**$1095**

MONITORS

Mono Flat Screen 14″	**$175**
Mono VGA	**$195**
Colour EGA 14″	**$525**
Colour VGA 14″	**$650**
Colour CGA 14″	**$375**

GRAPHICS CARDS

Mono Card	**$95**
Colour Card	**$95**
EGA Card	**$175**
VGA Card	**$265**

SOFTWARE

MICROSOFT

MS Windows 286	**$140**
MS Windows 386	**$199**
MS Excel	**$595**
MS Word	**$495**
MS Chart	Call
MS Works	Call
MS C Compiler	**$550**
MS Quick C	**$135**
MS F4 Simulator	**$95**
MS Cobol	Call

OTHER

WordPerfect V5	**$575**
WordStar 20084 +	**$395**
WordStar V5	**$350**
Tracker V2	**$95**
Open Access II	**$695**
Lotus 1-2-3	Call
Symphony	Call
DBase IV	Call
Multimate	Call
Ventura 2.0	Call
Pagemaker	Call

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PRICES SUBJECT TO CHANGE WITHOUT NOTICE

BROTHER 1224L
24pin, 162cps

$585

TURBOMATE 386/20
20Mb,
MONO, Small Footprint

$3995

EGA
MONITOR & CARD

$675

VGA
MONITOR & CARD

$799

MS WORD
V5.0

$495

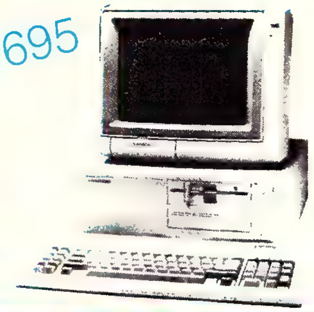
WORDPERFECT
V5.0

$575

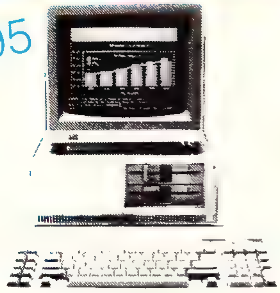
WORDSTAR
V5.0

$350

$1695



$2295



$3995

TURBOMATE XT/10 **TURBOMATE 286/12** **TURBOMATE 386/20**

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TURBOMATE XT/10

4.77/10 MHz, 640K, Ser, Par, 1 Year Warranty, MS DOS 4.01

20 Mb HD, 360K FDD, mono flat screen 14″	**$1695**
20 Mb HD, 360K FDD, EGA colour 14″	**$2095**
20 Mb HD, 360K FDD, VGA colour 14″	**$2295**

TURBOMATE 286/12

6/12 MHz, 1Mb, Ser, Par, 1 Year Warranty, MS DOS 4.01

20 Mb HD, 1.2Mb FDD, mono flat screen 14″	**$2295**
20 Mb HD, 1.2Mb FDD, EGA colour 14″	**$2695**
20 Mb HD, 1.2Mb FDD, VGA colour 14″	**$2795**

TURBOMATE 286/16

8/12/16 MHz, 1 Mb, Ser, Par, 1 Year Warranty, MS DOS 4.01

20 Mb HD, 1.2Mb FDD, mono flat screen 14"	**$2795**
20 Mb HD, 1.2Mb FDD, EGA colour 14"	**$3295**
20 Mb HD, 1.2Mb FDD, VGA colour 14"	**$3395**

TURBOMATE 386/20

8/16/20 MHz, 2Mb, Ser, Par, 1 year warranty, MS Dos 4.01

20Mb HD, 1.2Mb FDD, mono flat screen 14″	**$3995**
20 Mb HD, 1.2Mb FDD, EGA colour 14"	**$4495**
20 Mb HD, 1.2Mb FDD, VGA colour 14"	**$4595**

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40Mb, SM, EGA

$2795

TURBOMATE 286/16
40Mb, EGA

$3395

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TURBOMATE XT/10
20Mb, COLOUR

$1895

TURBOMATE 386/20
40Mb, VC, VGA, Small Footprint

$4995

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Tel: (03) 696 1302 Fax: (03) 696 1232
Ground FLoor, 15-29 Bank Street,
South Melbourne Vic 3205

NEWCASTLE:

Tel: (049) 62 0910 Fax: (049) 60 1137
The Technology Centre,
Rankin Drive, Shortland N.S.W. 2308

ORANGE:

Tel: (063) 62 6907 Fax: (063) 63 1760
1st Floor, 68 Summer Street,
Orange N.S.W. 2900

PORT MACQUARIE:

Tel: Mid August Fax: (065) 83 7927
Suite 5, 74 Clarence St.
Port Macquarie N.S.W. 2444

MICRODIRECT

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77 Gladstone Street,
Fyshwick, N.S.W. 2609

TOWNSVILLE:

Tel: Mid August Fax (077) 212 351
Suite 1, 62 Walker Street, Townsville. QLD 4810

WAGGA:

Tel: (069) 25 5172 Fax (069) 25 1973
23 Dobney Avenue, Wagga. N.S.W. 2650.

ARMIDALE:

Tel: Mid August Fax (067) 78 8200
1st Floor, Richardson Arcade
195 Beardy Street, Armidale N.S.W. 2950

rows by 32 levels.

Enable/OA also offers spreadsheet linking and a Good macro capability. You can enhance spreadsheet text _but not numerals —with bold or italicised character styles. Overall, we rate Enable/OA's spreadsheet Very Good.

Enable/OA has the usual word processing features plus a long list of advanced features, including a Good spelling checker, multiple columns, embedded graphics, automatic generation of tables of contents and indexes, and proper handling of footnotes.

We found some aspects of Enable/OA's word processing frustrating to use, however. For example, word wrap does not pull characters properly from one line back to the line above; you have to manually restructure line lengths. Pressing Enter inserts paragraph marks but would not always insert a blank line. It takes too many keystrokes to perform certain tasks — three to delete a paragraph marker (F9-Del-Enter). Enable/OA has difficulty telling the difference between its own hyphens and yours, and removes yours when text wraps during automatic hyphenation. If you set unremovable hard hyphens using the Alt-hyphen keystroke, these hyphens would not break at the margin as they should.

While Enable/OA's word processing module offers exceptional flexibility, usability problems pull down the score to Very Good.

Enable/OA and Smartware II are the only products in this comparison that provide fully relational database capabilities. Although Enable/OA has a fairly complete programming language, it cannot compete against dedicated database applications products like dBase IV and Rbase for DOS. Even so, it is Excellent for accomplishing a myriad of smaller projects that require on-the-fly report and screen designing.

Enable/OA's database meets most of our criteria. The user interface consists of a four-by-six "Command Chart" of 24 database options, which range from adding records to browsing to packing deleted records. You can define your own data-entry screens with verification parameters, create a wide variety of reports, and read and write dBase III Plus, PC File, Condor, and ASCII files, though in our benchmark tests we had trouble importing an ASCII file that others handled easily. Handy features include "dittoing" of fields during addition, and full search and replace throughout a database. Setting up a database for a quick project is a lot of work, but Enable/OA is well-suited for complex tasks. We rate the database Very Good.

Enable/OA's telecommunications module is less powerful than its other applications. Although it offers terminal emulation of DEC VT-52, VT-100, and AT&T 4410 terminals, and both Xmodem and Kermit protocols, the auto-log-in facility is poor at best.

PC WORLD
PRODUCT SUMMARY

Enable/OA

Company: OptSoft Pty Ltd. Tel: (02) 680 3930. Fax: (02) 634 1142.
List price: $695.
Requires: IBM PC, XT, AT, PS/2, or compatibles; 512K of RAM; 640K recommended, required for using Perspective graphics; two floppy drives; hard drive recommended, required for using Perspective graphics.
Pros: Feature-laden three-dimensional spreadsheet and relational database; outstanding graphics capability; strong data integration; wide variety of network support; runs under DOS and OS/2.
Cons: Inconsistency and numerous manuals makes program hard to learn; difficult-to-use word processor; weak communications.
Summary: Enable/OA supports a wide variety of features and has strong spreadsheet, database, and graphics modules, but it is not easy to use and may confuse new users with its many menu styles.

The session setup facility only allows for two automatic responses to remote queries: user ID and password. If the service you are setting up uses a packet-switching network, Enable/OA lets you add a third response, for the network ID. The communications module would not even watch for a query from the remote service: After Enable/OA auto-dials, you need to monitor the call, pressing Enter at the appropriate times to send the preset responses. For more complex automation, you must go through an unattended transfer function off the main menu.

We are disappointed in this program's communications capability, which is the weakest we have tested and substandard for a program in this class. However, it does perform essential communications functions; therefore, we rate it Satisfactory.

Enable/OA's graphics capability nearly makes up for all its other weaknesses. The program actually contains two separate graphics programs. One is built-in and reminiscent of 1-2-3's basic charting capability. The other, called Perspective, draws beautiful three-dimensional graphics suitable for use in presentations as well as for embedding into documents.

The native charting program creates typical bar, line, x-y, pie, and high-low-close graphs in a variety of sizes and colours. A choice of display fonts, again similar to 1-2-3, can be used for graph axes, values, and titles. Data for graphing are pulled from either a spreadsheet or from the database module.

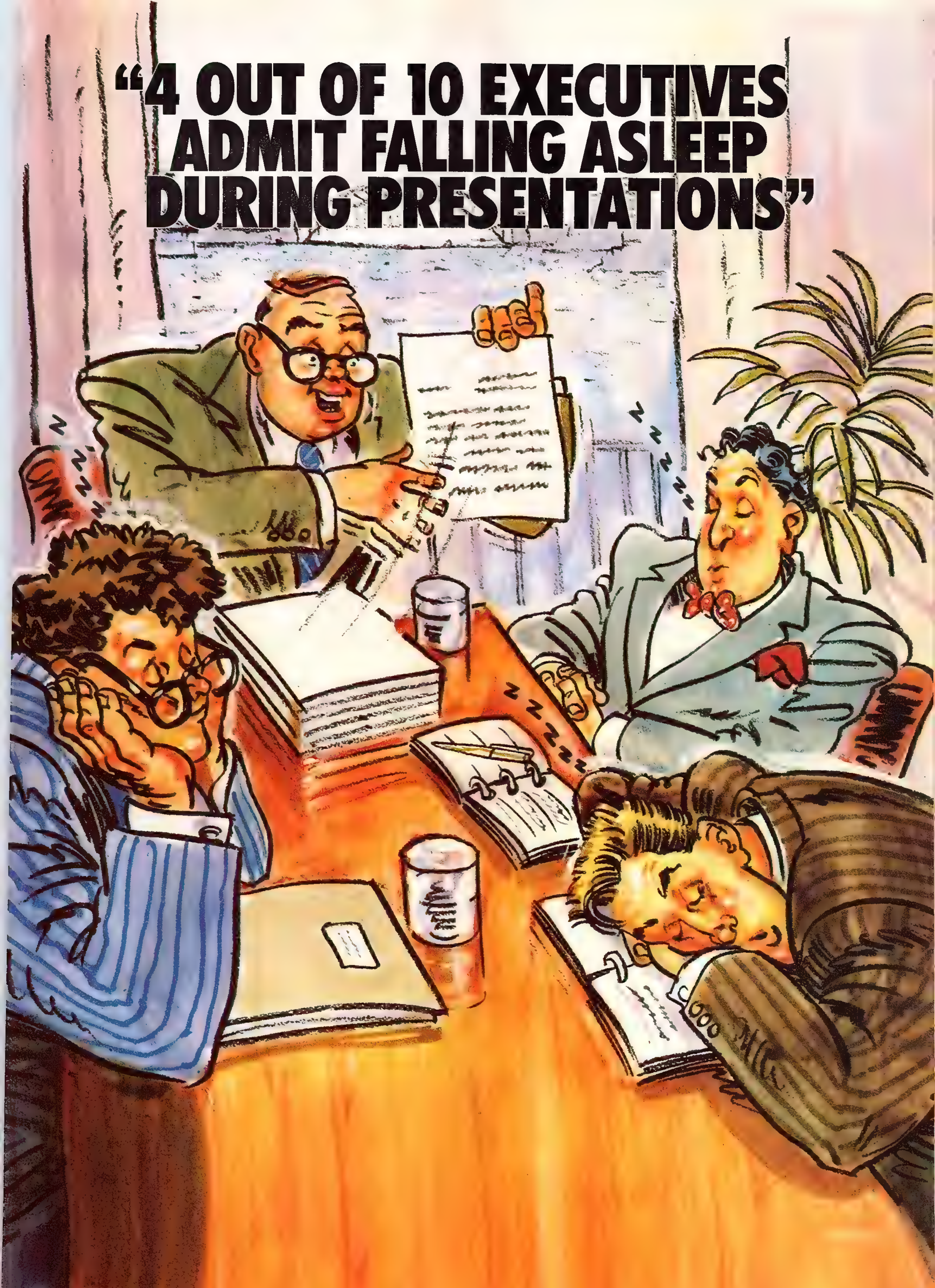
Perspective, created by Three D Graphics of Pacific Palisades, California, also imports raw data from Enable/OA's spreadsheet but can draw a staggering number of different three-dimensional bar charts, along with simpler pie, line, and other charts. Perspective offers 47 preset chart types, including topographical, pyramid, and other charts, along with nearly every conceivable option for modifying the charts. Perspective uses an entirely different command style, and its documentation ties the database manager's for complexity. But Perspective alone seems worth Enable/OA's $940 purchase price. We rate graphics Excellent.

Enable/OA does a fine job of integrating data between applications: Just about everything can be copied into just about everything else. It also offers multitasking and multiprocessing; as many as eight applications windows may be open at once, and certain tasks, such as database searching, can be performed in the background.

Where Enable/OA falters is in the look and feel of the applications; each module feels like an entirely different program. It is the antithesis of Symphony, where everything looks and feels like a spreadsheet. But on account of the data flexibility, we rate level of integration Very Good.

Enable/OA varied little from other products' speeds in our benchmarks, testing either a little faster or slower. We therefore rate Enable/OA's speed Good.

“4 OUT OF 10 EXECUTIVES ADMIT FALLING ASLEEP DURING PRESENTATIONS”



NEW GENERATION CANON LBP III

Canon LBP-8III
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Canon LBP-8III

We're not making this statistic up about sleeping executives just to make our point. It comes from a survey conducted among top executives of the 200 leading companies in America. Men involved in making decisions concerning billions of dollars.

And the way we see it, there are two probable causes. Perhaps the speaker was terminally boring. Or worse, for simple lack of effort, the presentation was displayed so poorly that no one cared. We can't do much about the former, but when it comes to the latter, Canon has the answer.

Canon Introduces The World's Most Talented Printer, Again

The people who invented desktop laser beam printers, and who make close to 80% of the "engines" sold in the world, would like to introduce you to the next generation. It is the Canon LBP III, the printer that lets you fill the gap between word processing and desktop publishing.

Canon calls this concept "word publishing," because by using the latest generation of several WP packages you can achieve most of the effects needed by everyday offices, only by investing in a new Canon LBP III.

You don't have to buy a more expensive computer; an ordinary PC will suffice. You don't have to buy exotic software. Word Perfect 5.0 or MS Word 5.0 work quite nicely thank you.

And for most functions you don't need to equip the printer with exotic, and expensive, page description languages, or upgrade the RAM on-board the printer.

You can see straight "out-of-the-box" examples of word publishing right on this page.

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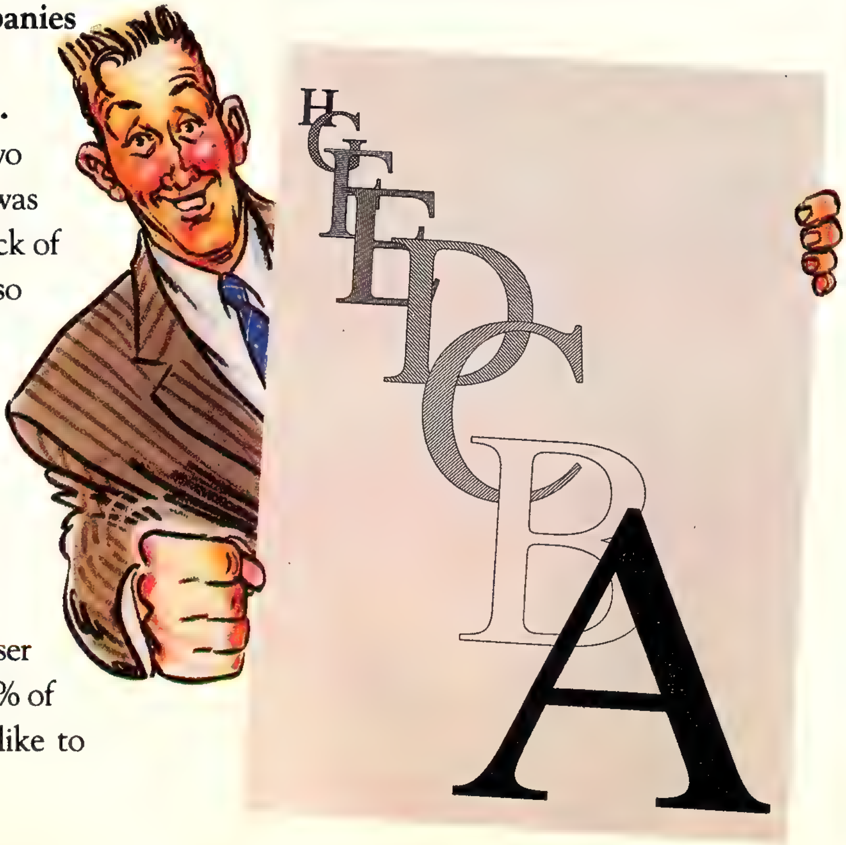
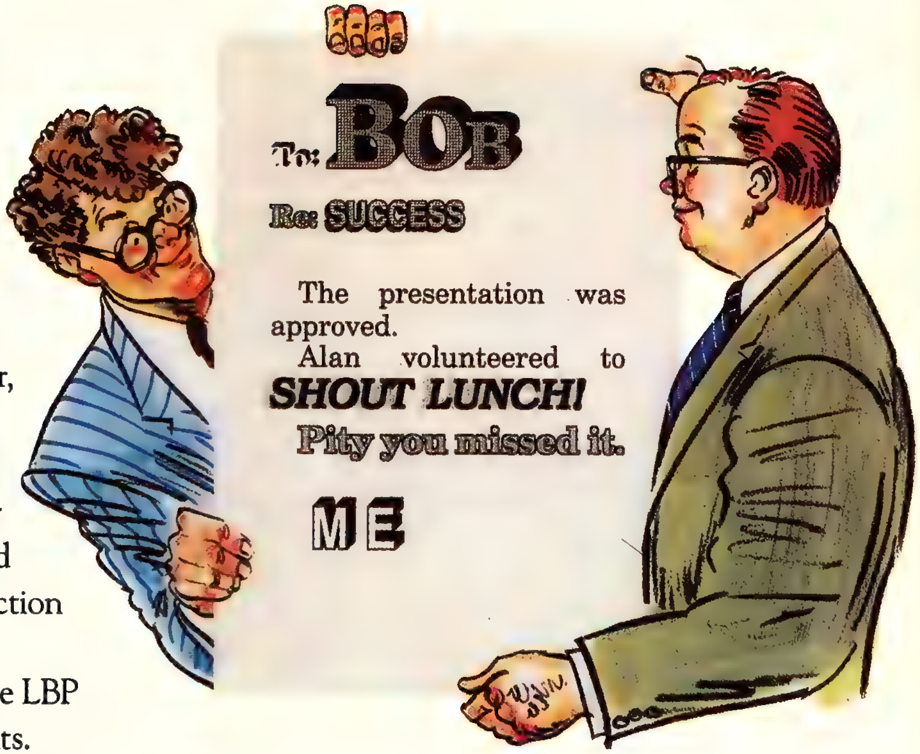
Say goodbye to small, boring typefaces. Because the Canon LBP III offers scalable fonts



LHV/CS161/B

HE ANSWER.



To: BOB

Re: SUCCESS

The presentation was approved.
Alan volunteered to
SHOUT LUNCH!
Pity you missed it.

ME

that can be driven by everyday word processing in sizes of up to 1550 points.

There are nine internal scalable fonts: four in Swiss and Dutch (regular, bold, italic and bold italic); and Simbol regular. And new smaller optional IC cartridges hold up to four times the number of bitmap fonts and another 22 scalable fonts, in a fraction of the size.

If you still need more choices, the LBP III will also accept down-loadable fonts.

Which means you can put headlines on overheads guaranteed to wake up just about any meeting.

Ornamentation, Rotation and Graphics

Naturally Canon offers the standard font enhancements. But if you really want to stop the "skim reader in his tracks," font ornamentation goes much further.

You can choose from all kinds of patterns, shadows and outlines with 64 different kinds of shading patterns. It's even possible to combine modes. The shadings and hatchings are down-loadable, and the printers include a built-in font cache for faster retrieval of fonts.

The new LBP III

Finally, if you have the misfortune of being the first presenter immediately after lunch, another feature is font rotation. With the right software you can rotate fonts in 360 degree circle, or create a spiral effect.

Canon's unique vector graphics will allow the printer to print circles, ovals, squares, rectangles or whatever other geometric figure that has been specified. To take advantage of these new features the LBP III has standard RAM of 1.5 Mbyte and is expandable in one, two and three megabyte increments.

Canon Finance Makes it Easy

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LHV/CS161/C

Documentation: There are six manuals with Enable/OA. We have been told that they have been totally rewritten in Australia. The one complaint with our California Test Centre was the amount of documentation provided with the US version. They say, when it comes to documentation, the Enable/OA credo seems to be quantity over quality. There is an overwhelming number of books, including one entitled Supplemental Documentation. There is a 48-page quick-reference guide that will be complete by the time this comparison goes to press. It is worth its weight in gold because it is the only place that lists the hundreds of keyboard shortcuts. On-line help is present, but it is vague and not always context-sensitive. We rate documentation Satisfactory.

Ease of learning: You would not get instant productivity with Enable/OA. It tends to be a complicated, unintuitive product. It comes with sample data files, but they are only useful once you have figured out the basics.

Enable/OA is learnable, but it requires the level of training you would need for a minicomputer-based office automation system. To that end, Enable Software Inc. offers a full training program. For an integrated package designed for the personal computer, however, Enable/OA's ease of learning is Poor.

Ease of use: Once the basics are mastered, it is possible to take advantage of Enable/OA's flexibility by ignoring the menus and using shortcuts, like F9-Del-B-Y to delete a highlighted block of text. The shortcuts exist for nearly all operations but require substantial memorisation. Lack of mouse support makes matters worse, especially since the program is very keyboard-intensive.

The vendor no doubt intends Enable/OA to be used so heavily that the keystrokes will become second nature. For the average user who wants to get the job done without dealing with a complex computer system, however, Enable/OA's inconsistent menu structure and unintuitive operation will remain hard to use. We therefore rate ease of use Poor.

Error handling: Enable/OA goes out of its way to help you prevent and recover from mistakes. Error messages advise you to save files before exiting and warn you before allowing you to overwrite an existing disk file. The program even asks "Are you sure?" before letting you delete a block of text. An undo feature also helps prevent errors, and auto-save tries to save work in case of a power failure.

The manuals for each of the applications modules contain a section listing error causes and solutions. We rate error handling Excellent.

Value: Enable/OA's impressive list of features and powerful modules pales before its difficulty of learning and use. For the small office or individual user, Enable/OA's $940 price tag is not that Good a value, certainly less so than even the slightly more expensive Smartware II and Framework III. Even in larger offices, where training resources are present, the other integrated products offer comparable performance without the learning-curve pain. The only aces Enable/OA holds are the Perspective graphics module and its out-of-the-box compatibility with DOS, OS/2, and many networks. Because of these and its strong spreadsheet, word processor, and database modules, we rate value Satisfactory.

FRAMEWORK III

VERSION 1.1

Framework III's user interface may be a pull-and-drag window-oriented desktop, but it is not Windows, Gem, or even a Macintosh. Framework has a personality of its own.

The foundation of Framework III is the "frame,", or window. Frame types include word processing, spreadsheets, business graphics, and flat-file databases. Word frames can do extra duty — holding outlines, telecommunications sessions, or a DOS shell. Many frames may be open on the screen at once, and it is easy to switch among them.

The key to data integration within Framework III is the outline frame, which contains other frames of various types, nested as deeply as desired. These subframes may be positioned to create a printable document or to organise a series of documents, spreadsheets, and database files relating to a single topic. We initially found this plethora of frames and subframes confusing, but after the one-object-per-frame idea sank in, we found the environment intuitive, consistent, and comfortable.

Adding to Framework III's flexibility is Fred, the advanced macro programming language. Joining the familiar concepts of spreadsheet @ functions and macros, the Fred language operates on many levels within all types of frames.

PC WORLD

PRODUCT SUMMARY

Framework III

Version 1.1

Company: Micro Australia. Tel: (02) 736 3299. Fax: (02) 73 3663.

List price: Single-user version, $1,095; network version (5-user), $1,550.

Requires: IBM PC, XT, AT, PS/2, or compatibles; 640K of RAM; two floppy drives; hard drive recommended.

Network version available.

Pros: Easy-to-learn graphical user interface with desktop metaphor; powerful communications capability; unparalleled data integration; multiple open applications windows; valuable programmable macro language.

Cons: Works best on EGA and VGA systems; word processor clumsy for complex documents; database and spreadsheet could be stronger.

Summary: Framework III lacks the range of features found in Enable/OA and Smartware II, but it is the easiest package to use and offers the most data integration. It is a great product for people who are looking for more power than low-end packages have to offer but do not want to memorise complex command sequences.

Performance: Within the Framework spreadsheet, text and numbers may be displayed in bold, italics, or underscore; numbers can be shown in a variety of formats. Fred's collection of formulas offers a useful variety of mathematical, statistical, financial, and text-manipulation functions.

Spreadsheets may be as large as 32,000 by 32,000 cells, or as small as you desire; by choosing to make them smaller, more can fit in memory at one time. Macros and advanced formulas are written in the Fred programming language, giving the spreadsheet exceptional flexibility. Framework III can read .DIF and Lotus .WKS and .WK1 files easily. Spreadsheet frames can link

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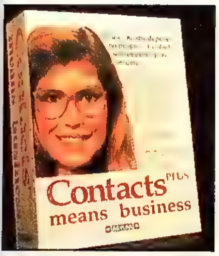

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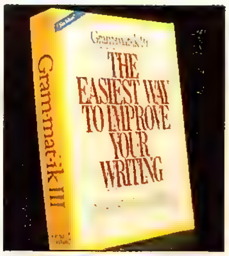

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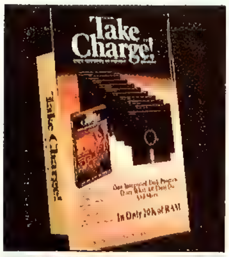

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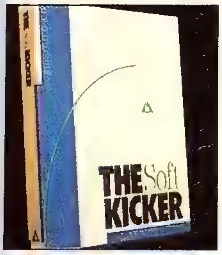

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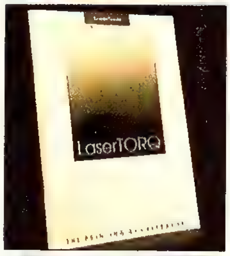

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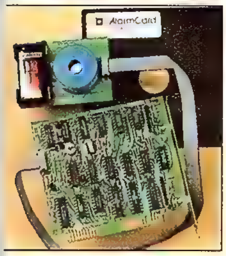

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Fax89 $895
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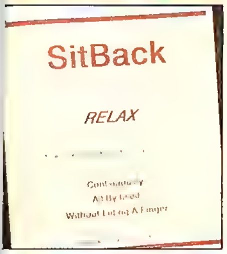

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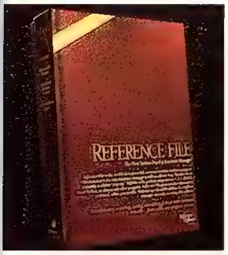

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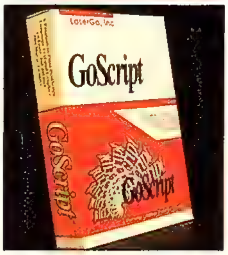

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and perform all of the essential functions and then some. The only major features missing are auditing and three-dimensional worksheets; we rate the spreadsheet Very Good.

Framework III's word processor performs many of the usual text-enhancement features, such as bold, italics, and underline; editing tools like cut and paste; and full control over margins and tabs. Extra features include bulleted lists, footnoting, and automatic hyphenation. The spelling checker also contains a thesaurus, and even a terse dictionary. The program's built-in outlining capability allows you to easily deal with large, complex documents.

Not much has been left out. It is difficult to mix various printer fonts, and there is no support for working with proportionally spaced characters. Creating multiple-column documents is tedious, and it is hard to experiment with different page formats. And although Framework III will show page breaks within a document, you must manually select "view pagination" after editing text. Overall, the word processor is simple enough for short documents and robust enough for long ones; we rate it Very Good.

Framework III's built-in database allows simple manipulation of flat files, viewing them as collections of frames, as simulated spreadsheets, or as card files. The database can read .DIF files and perform operations on dBase .DBF files. It cannot accept comma-delimited files; these are automatically imported into a text frame and can be transferred to the database or spreadsheet -- only by using an extended cut-and-paste feature. You can apply text enhancements to the database or use global search-and-replace functions for updating.

But don't look for relational database power: Each database is handled as a linear table, not unlike a spreadsheet. The program offers Good database searching but little flexibility in designing print formats or in performing total calculation in printed reports. For all such activities, database information must be linked to a spreadsheet and worked on there.

The pull-down menu option to do sorts only supports a single sort level; more complex sorts require use of the Fred programming language. To sort on two fields, first sort on the least significant, then separately on the most significant. The database capability is adequate only for on-screen record keeping; it is perhaps best used for taking advantage of the word processor's mail-merge capability. Beyond that, there is little that the database does that the spreadsheet does not. We rate it Poor.

Modem communications in this integrated package allow the use of communications scripts; Framework III automatically captures the text of a communications session into a word processing frame or can save it to disk. File-transfer protocols are Xmodem, Ymodem, Kermit, Crosstalk, and Smartcom. There are many terminal-emulation modes, including DEC VT-52 and VT-100, IBM 3101, Minitel, Prestel, and Televideo 925-series.

Other features include auto-answer and remote control of communications sessions, like a miniature bulletin board. Plus, the Fred programming language allows the creation of complex scripts. We rate communications Excellent.

Business charts may be drawn from spreadsheet data but cannot be enhanced with the user's choice of colours and patterns, with a variety of display type styles, or with special effects like three-dimensional shading. Graph choices are bar, stacked bar, pie, line, point, x-y, and high-low-close. Framework III allows permanent links between all types of frames. For the links to be active, all linked frames must be open on the desktop; the program would not go out to disk for data. Links may be either one-way, as in a simple reference to database or another spreadsheet data; or they may work both ways, automatically updating all spreadsheets and graphs when any data are changed.

The work environment is well-integrated, with a consistent user interface, a command line that works on all applications, and nearly unlimited capacity for simultaneous open files and windows. Framework's integration rivals that of Windows and the Macintosh; we rate integration Excellent.

Framework III was fast at some benchmark tests but took much longer

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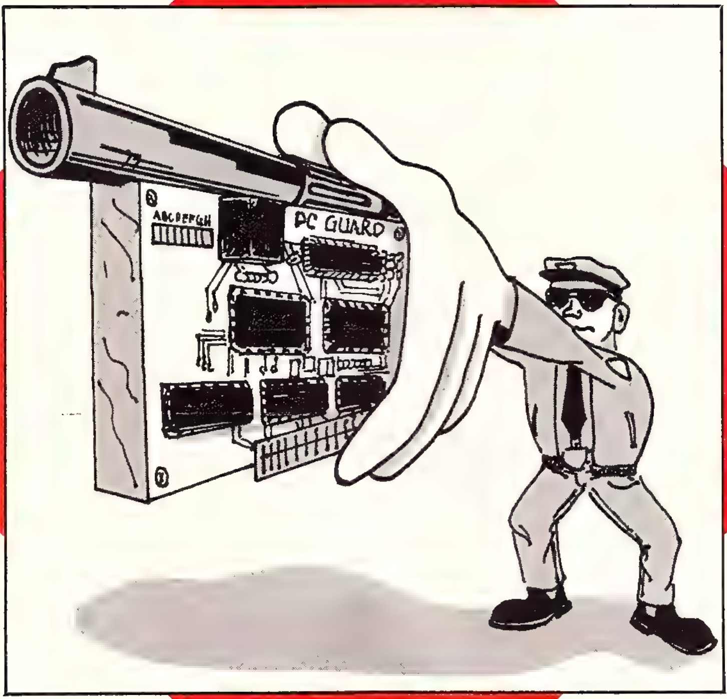

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to integrate results. Overall, we rate Framework's speed Satisfactory.

Documentation: Framework III comes with two thick loose-leaf manuals, one for the environment and applications, the other for the Fred programming language. Also provided is an Up and Running manual, which contains lessons and exercises and a quick-reference guide. While uninspired, all of the manuals were clear and readable, and the on-line help is context-sensitive and has an index. We rate documentation Very Good.

Ease of learning: Guidance for the new user is found in a quick tour and a series of exercises with provided data files and in an electronic tutorial. The exercises let new users experiment.

The big hurdle is understanding the frame metaphor, but we suspect that new users should have less difficulty here than those blinded by experience. The user interface is consistent, so users can move seamlessly from one application to another without having to learn new commands or menus. Once basic concepts are understood, you are home free. We rate ease of learning Very Good.

Ease of use: Framework III can get as many as 60 lines on VGA screens, making the desktop metaphor even easier to use. Another handy feature is the program's internal use of unlimited-length frame names (although only the first eight characters are significant when saving to disk).

In addition to file windows, the desktop metaphor shows a digital clock, reference library, and system drive letters. The reference library stores user-defined notes and macro definitions.The pull-down menus are always available within any frame. The menus and submenus also remember the latest option you selected, which can be a real time-saver.

Framework III provides simple, straightforward mechanisms for navigating around and within frames; a mouse is highly recommended, but the program can also be used with only a keyboard. The program supports a DOS shell but also lets you perform sophisticated file-maintenance operations from within the desktop. The only drawback is that you have to exit Framework and run a setup program to reconfigure the system. Despite that, we rate ease of use Very Good.

Error handling: Framework III includes an Undo function as well as a safety feature that protects against accidentally erasing disk files or renaming files. It also checks to see if you wish to save open files before exiting back to DOS. However, Framework III does not automatically create backups of data files or offer an auto-save option. The program's messages are clear and concise; we rate error handling Good.

Value: At $1,095, Framework III is a Very Good value, providing a comfortable and well-integrated environment as well as flexible data integration. Most applications, with the exception of the database, are among the best available. Easy to learn and use, Framework III is suitable for novices and more advanced users in both small and large work environments.

MICROSOFT WORKS

VERSION 1.05

Microsoft Works is a starter solution for new MS-DOS users and anyone looking for name-brand performance at an affordable price. Works offers four basic applications: word processor, spreadsheet, database, and communications. The word processor includes a spelling checker; the spreadsheet can produce charts and graphs. Microsoft uses text-based pull-down menus.

Works treats its four applications as different data types, all within one desktop environment. It is not necessary to explicitly enter a spreadsheet module, for example, to access a spreadsheet file; just pick a spreadsheet file from the File menu, and the correct module is loaded. As many as eight files of any kind may be active at one time. Switching between open files is easy: You select the desired file from a menu. This easy integration is reminiscent of Desqview.

Works offers macro capability through a separate stand-alone TSR program called Mskey, which can only be used with Works. It has the look and feel of a last-minute addition, but it gets the job done.

Performance: Works' spreadsheet uses the .WKS file format as its native format, giving the program effortless data compatibility with Measuring as large as 256 columns by 4,096 rows, the spreadsheet does not offer 1-2-3-compatible macros but does have its own auto-record macro capability and command language. A bonus feature is the capability to emphasise text and numbers through use of bold, underlined, and italics fonts. Works does not offer 3-D worksheets or linking between spreadsheets. On balance, we rate the spreadsheet Good.

Works provides the usual word processing features: enhanced text, WYSIWYG margins and pagination, search and replace, headers and footers, variable margins, margin justification, and avoidance of widows and orphans. The program offers full cut and paste, including the capability to cut and paste between any open files. What is missing are options for creating sophisticated documents using multiple columns, automatic hyphenation, tables of contents, indexes, and footnotes.

The word processor includes a spelling checker, which claims that "Microsoft" is a misspelled word. Within the text editor, you can create multiple windows of a document; unfortunately, you cannot have more than one file displayed on the screen at one time. Works provides a wide selection of text and large-size display fonts, which may be printed on dot-matrix or laser printers, as can explicit ASCII printer-control codes. Overall, we rate word processing Good.

The flat-file database is ideal for maintaining simple lists of information, and retrieving that information through form letters, queries, or various printed report formats. On-screen information may be viewed as a row-and-column spreadsheet, or as a one-record-per-page form. Individual fields may hold text, numbers, or spreadsheet-style formulas; database fields may be added, removed, or modified on the fly.

A fill-in-the-blanks query screen lets you pull up information one record at a time, using multiple and/or selections. Report generating is fast and flexible, using a menu-based report editor; Microsoft has found one of the easiest methods of creating custom reports that we've experienced. Works has difficulty with name-brand file compatibility, not understanding .DIF or .DBF files (though it has the easiest, most trouble-free delimited-ASCII imports we've seen), and it does not support advanced features such as unlimited-length memo fields, data search and replace; nor does it offer relational capabilities. However, because it offers solid performance as a basic flat filer plus very flexible reporting, we rate the database Good.

Telecommunications within Works is automatically logged to a RAM file; incoming text may also be captured to disk. Works supports ANSI and DEC VT-52 terminals, and uses the Xmodem

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file-transfer protocol. The only labour-saving feature is simple log-in record/playback; the program does not have a full-power script language. Works also does not offer additional protocols, emulations, or remote session control -- features that would be needed for heavy-duty communications. Works' communications is fine for an undemanding audience; we rate it Satisfactory.

Works produces bar, line, area, high-low-close, pie, and x-y graphs, based on information stored within the spreadsheet; it can also handle combined bar/line charts and 100 per cent bar charts. Adding to the versatility of the charts are a variety of title and text bit-mapped fonts, printable in several sizes, the capability to manually pick colours and patterns, and dual y-axis for multiple line graphs. . Works is ideal for producing basic business charts both for printing and embedding in documents; we rate graphics Very Good.

Works supports full cut and paste between any open applications windows. Spreadsheets and various selections of database information may be copied into documents, links automatically update (if the files are loaded into RAM), and Works allows you to have as many as eight open data files at one time. Windowing, unfortunately, is limited to multiple views of only one data file. Works is very integrated, and is awarded a score of Very Good.

Microsoft Works came in at the top of the list in speed. A unique time-saving feature is its capability to sort entirely in memory and write the sorted data to disk only when it is time to save the file. We rate its speed Very Good.

Documentation: Works comes with a single manual that is well-written, easy to understand, and well-organised, with an introduction to each module, plus thorough, detailed references. The only flaws are a shortage of screen representations, and the placement of the index before the (unindexed) appendixes and the section on the macro system. Also included are an idea booklet for Works, a road map for learning the product, a quick-reference keyboard guide, and a short introduction to PC hardware and MS-DOS. This printed documentation is supplemented by indexed on-line help, which sometimes is context-sensitive. Overall, we rate the documentation Good.

Ease of learning: Works offers two primary learning aids: its documentation, as well as on-line tutorials given through on-line help. You get a learning boost if you know the other Microsoft products, like the Quick languages and Windows, since they use a similar user interfaceis obvious that Microsoft designed Works with the interests of new users in mind. However, additional examples and sample data files would have made a shallow learning curve even more shallow; we rate ease of learning Very Good.

Ease of use: Works offers plenty of easy-to-remember keyboard shortcuts for such activities as pulling down menus and making text bold. Unlike similar products, however, the only way to learn about the shortcuts is to read the manual or use on-line help; the pull-down menus don't list the shortcuts next to the appropriate items.

Works follows standard conventions, such as F1 for on-line help. Works also allows use of the mouse but can be used perfectly well

INFOWORLD BENCHMARKS
Integrated Software

	Enable/ OA Version 3.0	**Framework III** Version 1.1	**Microsoft Works** Version 1.05	**PFS:First Choice** Version 3.0	**SmartWare II** Version 1.0	**Symphony** Version 2.0
Database						
Import data	0:16	0:32(1)	0:44	0:49	0:08	0:06
Sort on one field	0:15	0:03	<0:01(2)	0:18	N/A(3)	0:02
Spreadsheet Small arithmetic model						
File size	102K	273K	125K	N/A(5)	103K	123K
File load	0:11	1:30	0:09	N/A(5)	0:02	0:09
Recalc partial	0:02	1:22(4)	0:01	N/A(5)	0:03	0:01
Recalc all	0:01	1:33(4)	0:02	N/A(5)	0:03	0:02
Word processing						
Open document	0:01	<0:01	0:01	0:01	0:03	0:01
Reformat and repaginate	0:01	0:02	0:02	0:05	0:03	0:06
Search and replace	0:01	0:04	0:01	0:10	0:04	0:09
Integration						
DB to WP	12:15	18:38	12:39	13:27	14:45	21:20
DB to SS to WP	22:20	39:20	19:35	25:11	28:42	32:39

Times in minutes:seconds.
Database tests conducted on an 8MHz IBM PC AT with a 30-megabyte hard drive. All other tests conducted on a 12MHz 80286 Compaq Portable III with CGA and monochrome drivers, 20-megabyte hard disk, 1.2-megabyte floppy, and 640K of memory.
(1) Framework III: Import is of DBF file; Framework III is unable to import an ASCII name-and-address comma-delimited file into a database frame. (2) Microsoft Works: Sorts in memory; saves sort on file save. (3) Smartware II does not sort; index time was nine seconds. (4) Framework III: Spooling to disk enabled in order to hold test file; recalc times reflect disk access overhead. (5) PFS:First Choice: Insufficient memory to load test file.

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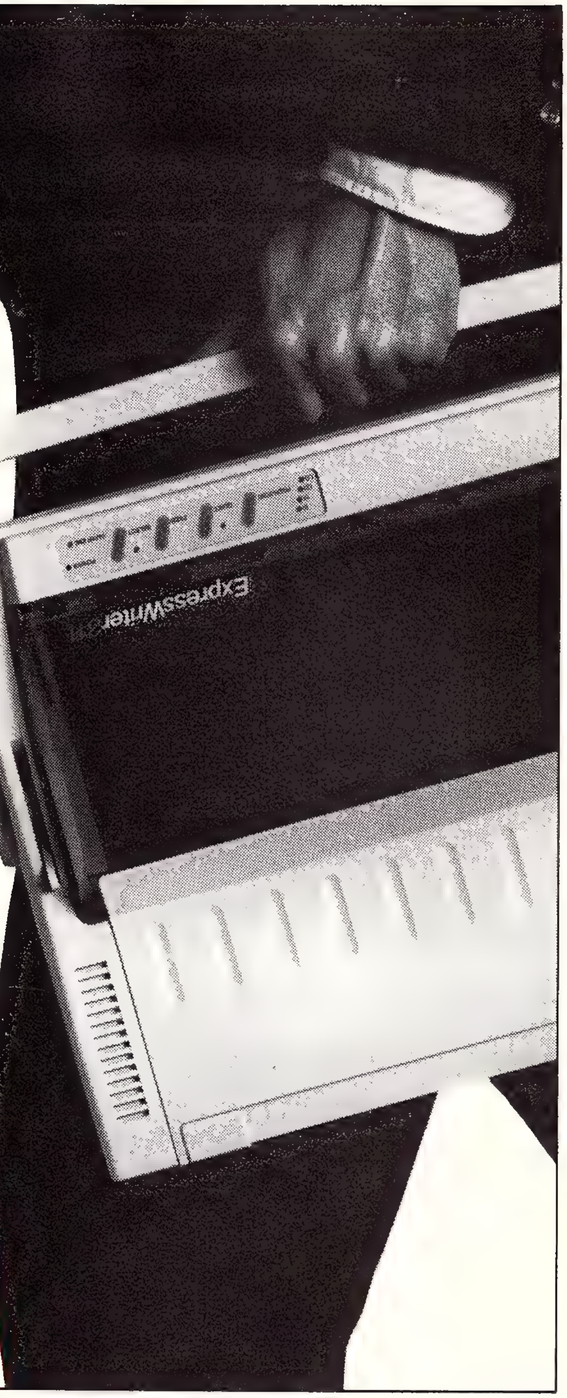
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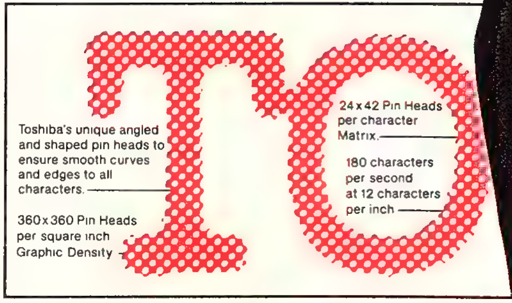
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REPORT CARD
Integrated Software

	Enable/ OA Version 3.0	**Framework III** Version 1.1	**Microsoft Works** Version 1.05	**PFS:First Choice** Version 3.0	**SmartWare II** Version 1.0	**Symphony** Version 2.0
Price	$940	$1,095	$295	$253	$1,095	$1,165
Performance						
Spreadsheet	Very Good	Very Good	Good	Satisfactory	Good	Very Good
Word processor	Very Good	Very Good	Good	Satisfactory	Very Good	Good
Database	Very Good	Poor	Good	Good	Very Good	Poor
Communications	Satisfactory	Excellent	Satisfactory	Satisfactory	Good	Satisfactory
Graphics	Excellent	Satisfactory	Very Good	Good	Very Good	Good
Integration	Very Good	Excellent	Very Good	Poor	Very Good	Very Good
Speed in use	Good	Satisfactory	Very Good	Good	Good	Satisfactory
Documentation	Satisfactory	Very Good	Good	Good	Good	Very Good
Ease of learning	Poor	Very Good	Very Good	Good	Good	Satisfactory
Ease of use	Poor	Very Good	Very Good	Good	Very Good	Good
Error handling	Excellent	Good	Very Good	Satisfactory	Very Good	Poor
Value	Satisfactory	Very Good	Very Good	Satisfactory	Very Good	Satisfactory

PC World reviews only finished, production versions of products, never beta test versions.
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Excellent = 1.0 — Outstanding in all areas. Very Good = 0.75 — Meets all essential criteria and offers significant advantages. Good = 0.625 — Meets essential criteria and includes some special features. Satisfactory = 0.5 — Meets essential criteria. Poor = 0.25 — Falls short in essential areas. Unacceptable or N/A = 0.0 — Fails to meet minimum standards or lacks this feature.

PC WORLD PRODUCT SUMMARY

Microsoft Works
Version 1.05

Company: Microsoft Pty Ltd. Tel: (02) 452 0288. Fax: (02) 452 4387.
List Price: $295.
Requires: IBM PC, XT, AT, PS/2 or compatible; 384K of RAM; PC- or MS- DOS 2.0 or later; two 360K floppy drives or one higher-capacity drive.
Pros: Good word processing, graphics and integration; easy to learn and use; consistent user interface.
Cons: Poor macro capability.
Summary: Microsoft Works is the best all-around value in a personal integrated package, with a consistent and easy-to-learn user interface, overall good applications, and a good price.

with only the keyboard. The screen can be used in only one mode, 80 columns by 25 lines, and users can easily access a DOS shell. The capability to painlessly switch among as many as eight files adds to its usability; we rate ease of use Very Good.

Error handling: Works assumes that the user is going to worry about saving data routinely; there is no auto-save option, though Works creates backups. Works asks for permission before overwriting files, before saving files in ASCII format (thus losing formatting), and before deleting files from disk. There is an undo feature in the word processor only. Works' error messages are clear and unambiguous. We rate error handling Very Good.

Value: Works is not all things for all people: It is best for new computer users who are not sure what software to buy, for infrequent computer users, and for those seeking only to perform basic word processing, spreadsheet, database, and communications functions without suffering through a long learning curve. At its price of $295 Works is a Very Good value for those users.

PFS: First Choice

VERSION 3.0

First Choice includes scaled-down versions of Software Publishing's popular word processor, spreadsheet, graphics, and database products, together with a telecommunications module. The unintimidating pull-down menu approach will be familiar to many users, making it easy to offer advice to First Choice novices.

Each of the main applications is accessible from a main menu as well as five external programs and a handy Disk Utilities menu that helps with tasks such as creating directories and erasing files. Only one file may be open at a time; while a file is open, you cannot access a DOS shell, although you can use Disk Utilities.

First Choice includes a macro facility, limited to simple keystroke recording and playback.

Performance: First Choice's spreadsheet has some Good features, such as row-and-column title extrapolation (tell it January, it automatically supplies February, March, and so on); automatic adjustment of column widths; and a Good selection of mathematical, table-lookup, conditional, and other functions. A spreadsheet can be as large as 1,024 by 768 cells.

It is one of the most frustrating spreadsheets we've ever worked with, however, because of the user interface. For instance, when you move the cursor to a cell containing a number and type a new number, First Choice inserts the new digits into the cell — the old entry does not disappear completely. This could either save a number for you or result in a wrong number, even if you are in write-over mode. You must press Alt-F before entering formulas.

There is no facility for linking cells from several spreadsheets. You also cannot read .DIF files, although First Choice understands 1-2-3 .WKS and .WK1 file formats. The spreadsheet also lacks advanced features such as spreadsheet auditing. The spreadsheet is fine for creating a home budget, but it does not stack up to some of the others we examined. On balance, we rate it Satisfactory.

Although PFS: First Choice's word processor outwardly resembles PFS:Professional Write, the substance does not justify the appearance. This word processor is suitable for only the simplest tasks, and would be frustrating for people familiar with other word processing environments.

The word processor possesses several Good features, like a spelling checker and thesaurus, and the capability to read files created by programs such as WordStar, Microsoft Word, and WordPerfect (using a utility disk provided free when you return your warranty card). However, First Choice lacks features such as handling of various printer fonts and proportional characters, multiple columns, automatic hyphenation, and handling of widows and orphans. Added to this are many irritations: You cannot add a character to the end of a word if that word ends at the right margin; text does not always wrap properly when the middle of a paragraph is edited, requiring you to manually readjust line breaks; word wrapping after a sentence often results in two spaces after the period; the cursor does not keep up with the Delete key; and pressing the Tab key in insert mode does not insert a tab but merely moves the cursor to the next tab stop. Because of so many drawbacks, we rate First Choice's word processing only Satisfactory.

First Choice offers flexible design and implementation of flat-file databases. You can view databases as either individual records or as a spreadsheet-style table; database forms may be many lines long, expanding to fill several screen pages. The report mode is fairly complete, allowing clean multicolumn listings with column totals and subtotals and even calculated fields.

First Choice does not provide relational capabilities, compatibility with .DIF and .DBF file formats, or sophisticated data verification. However, it delivers the essential features plus a few extras; we rate it Good.

First Choice offers all the features necessary for basic microcomputer communications: auto-dial, emulation of DEC VT-52 and VT-100 terminals, and Xmodem error-correcting file transfers.

Although First Choice offers auto-dial, its auto-log-in procedure is limited

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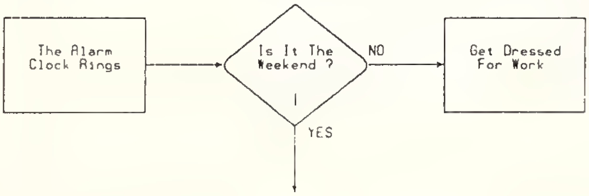

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to very simple record and playbacks. You cannot edit the recording or skip steps during playback: If the auto-log-in procedure misses a prompt, you need to abort the procedure and log in manually. Session logging is available, but only to RAM; you must explicitly save a long session in pieces before available memory is exhausted. . Still, First Choice is fine for talking to bulletin boards and some of the communications networks. Therefore, we rate communications Satisfactory.

Supported graph types include bar, line, pie, stacked-bar, and high-low-close graphs, as well as combined bar/line charts. First Choice will draw two linked-pie or single-column graphs next to each other, allowing you to show the detail within a pie segment.

Although First Choice does provide several type styles to use within a chart, there is no choice of size, and options for choosing colours and patterns are limited. However, First Choice does offer the capability to create large-font title pages or slides, with a choice of fonts and sizes. Charts can be displayed in a slide show or printed within a document. Overall, we rate graphics Good.

First Choice is the only package we looked at that does not allow you to have more than one file open at the same time. First Choice lets you copy spreadsheet information into a document, but you cannot insert database summaries or reports unless you print them to disk and merge them into documents. Also, changes to spreadsheet information don't cause automatic updates to charts.

The user interface is consistent across the product, using simple pull-down menus accessed with function keys. However, because First Choice cannot switch easily between various open applications and data files or allow split-screen windows, we rate integration poor.

PFS:First Choice tested slowest in the database benchmark tests but otherwise varied little or tested faster in other categories. We rate speed Good.

Documentation: First Choice comes with a single thick manual, which is written in a friendly, conversational tone. Organised by application, each section is complete, and in a style appropriate for First Choice's novice audience, although it is short of screen shots and it is hard to find needed reference information quickly.

Though it is context-sensitive, the on-line help is not as valuable; pressing the help key often gives very basic advice, such as to push a function key to pull down a menu bar. There is no on-line help index or on-line tutorial; the manual does contain a tear-out quick-reference card and a glossary. The documentation is adequate for the complexity of the product and then some; we rate it Good.

Ease of learning: First Choice meets its goal of being a "first choice" to introduce new users to microcomputer software. It is fairly intuitive, does not confuse users by offering too many features, and has a Good manual that resembles a large tutorial. By throwing in a glossary and a few sample data files, First Choice succeeds in its mission. We rate ease of learning Good.

PC WORLD

PRODUCT SUMMARY

PFS First Choice

Version 3.0

Company: Micro Australia. Tel: (02) 736 3299. Fax: (02) 73 3663.

List price: $253.

Requires: IBM PC, XT, AT, PS/2, or compatibles; 512K of RAM; two floppy drives; DOS 2.0 or higher; hard drive recommended.

Pros: Easy to learn; good documentation; attractive price.

Cons: Weak individual applications; poor integration; cannot use more than one data file at a time.

Summary: PFS First Choice is targeted for the new user; as such, it is a good value. However, Microsoft Works out-performs First Choice in nearly all categories and is comparably priced.

Ease of use: The consistent, intuitive menu structure makes First Choice pretty easy to use. There aren't many keyboard shortcuts — which is reasonable, considering that there aren't many program options.

First Choice gets points for using a mouse but it does not allow access to a DOS shell, although it does offer simple file-management utilities and lets you install external programs as options on the main menu. For a new-user program, we rate ease of use Good.

Error handling: First Choice does a Good job of warning you before letting you overwrite a file, and of prompting you to save files. Error messages and other notices are clear.

On the down side, we would have expected a program geared toward novices to offer undo or automatic backup. On the whole, we rate error handling Satisfactory.

Value: Priced at $253, PFS:First Choice is a viable option for new computer users looking for a throw-away package that will give them instant productivity. However, most users will quickly outgrow First Choice's limited power. Considering that the purchase price could be better applied toward the purchase of a more powerful program, such as Microsoft Works, we judge First Choice to be only a Satisfactory value.

SMARTWARE II

VERSION 1.0

The clear winner in this integrated-software bake-off is Smartware II. The latest version offers heavy-duty word processing, spreadsheet, database, communications, and graphics, plus a command language that ties all the loose ends together.

Smartware II's Project Development Language (PDL) combines many of the features of common macro languages with that of a procedural programming language like Basic or Pascal. While complicated for the nonprogrammer, the PDL makes it easy for advanced users to automate routine functions or add to Smartware II's capabilities. The product supplies two sets of menus, which share a two-line "Command Area" at the bottom of the screen. The first set of commands, accessed by the Esc key, has universal items such as file saving and accessing the main menu. The second group, scrolled through by F2, are actually function-key, Ctrl-key, and Alt-key code shortcuts, mostly for the first group of commands. Most of the commands are consistent across all applications modules.

Performance: Smartware's spreadsheet measures 999 columns by 9,999 rows. Spreadsheet data can be exported to the word processor, database, and to ASCII, .DIF, .WKS, and .WK1 files, and simultaneously activated spreadsheets will link. Smartware has only a rudimentary record-playback macro facility; for more complex automated procedures, you need to use the PDL.

The spreadsheet offers many printing options, including the use of user-defined fonts (described in the

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word processor section), and the capability to select row height in printer's points. Smartware also includes a Good selection of mathematical, logical, and other functions. Some functions, however, require excessive numbers of keystrokes: Formatting a single cell or block of cells as an integer takes at least 10 separate keystrokes. On balance, we rate the spreadsheet Good.

Once the basic concepts of Smartware's word processor are mastered, it is easy to use, with the many Ctrl-key and Alt-key shortcuts working well together to make document creation and modification simple, without having to search multiple menu levels. Smartware offers flexible multiple-column text, automatic hyphenation, proper handling of widows and orphans, and footnotes, as well as automatic generation of tables of contents and indexes. Graphics metafiles conforming to the CGM standard can be embedded into documents.

The software has the rare capability to create a varied selection of type fonts and styles, printable on most dot-matrix and laser printers. Smartware II includes a group of proprietary outline fonts, including sans serif, serif, script, and gothic. You can use those fonts at nearly any size, such as 30-point gothic, which can be easily printed on your printer. These fonts may be used throughout Smartware II, and give users without hardware font support the capability to produce more professional-looking output.

You get unusual flexibility in designing documents, such as being able to assign default fonts for the different levels in a table of contents and decide the maximum number of allowable hyphenations and number of lines that constitute a widow or orphan. There are only a few weaknesses, such as not being capable of directly importing and exporting except to ASCII files, and not being capable of previewing print files on the screen before sending them to the printer. Nevertheless, Smartware's word processing strengths earn it a score of Very Good.

PC WORLD

PRODUCT SUMMARY

SmartWare II
Version 1.0

Company: Informix Software Pty Ltd. Tel: (02) 488 7088. Fax: (02) 488 7556.

List price: $1,095; network access, $375 per user; individual modules available separately.

Requires: IBM PC, XT, AT, PS/2, or compatibles; 512K of RAM; 640K recommended; hard drive required.

Pros: Offers powerful programmable Project Development language; strong word processor, relational database, graphics; good documentation; supports expanded display on EGA and VGA; easy to use once learned.

Cons: Multiplicity of function keys not as easy to learn as Framework III's pull-down menus; spreadsheet and graphics slightly less powerful than Enable/OA's; lacks undo feature.

Summary: The best overall value in a professional integrated package, Smartware II offers feature-rich applications along with integration and macro capability to pull everything together.

Smartware II offers relational database capabilities, with custom-designed reports and on-screen forms capable of accessing multiple data files automatically. Creating a new database is easy for novices using a complex Project Development Language application that emulates a flat filer; more advanced users can build on that simple database, or define a more advanced one from scratch.

Databases may be viewed as a spreadsheet-like table, or as any number of custom forms ideal for data-entry personnel. Clearly, Informix designed the database with the flexibility to allow different people to access the same database through networks.

Database information may be imported and exported to .DIF, dBase III, Multiplan Sylk or ASCII-format files, or copied into the spreadsheet or word processor. Additional features include creation of memo fields as long as 31,000 characters, data verification, and the capability to create customised data-management environments with the Smartware II programming languages. The biggest weakness is that the system may be overwhelming for small database jobs. We rate the database Very Good.

We were disappointed that the Smartware communications module does not offer the extra features found in other Smartware II applications. The communications program has only two basic terminal emulations, ASCII and DEC VT52/100, and one error-correcting file-transfer protocol, Xmodem. For a major integrated package, we had expected to find IBM 3101 emulation, plus the Kermit protocol, for talking electronically with a wider range of minicomputers and mainframes.

Smartware also offers password-protected remote access, allowing distant callers to transfer files to and from your computer. A surprising lack is automatic logging of an entire session to disk, including both incoming and outgoing information. While most other integrated packages and communications provide logging, Smartware II only captures incoming information. Smartware II's chart-making capability is second only to Enable/OA's Perspective graphics package. The program creates a wide variety of bar, line, x-y, pie, and high-low-close charts using data extracted from the spreadsheet module, and it can print graphs or embed them into documents.

What is unusual is the range of graphing options, ranging from a wide variety of colours, patterns, symbols, and fonts, to three-dimensional bars and pies, to individual exploding pie segments. Smartware II even builds text-only charts, which are ideal for title slides or creating cover pages for reports. We rate graphics Very Good.

Integration of data comes naturally to Smartware II. Each application can export data to any other module, using a special "send" function, which converts the data into the appropriate format automatically. Similarly, the user interface is well-integrated across applications, with function-key, Ctrl-key, and Alt-key shortcuts meaning the same from one module to the next. One shortcoming is the incapability to window multiple data files from different applications; this would aid in visually integrating information. Overall, we rate integration Very Good.

Smartware tested average to fast in benchmark tests, with the fastest load time of all the products reviewed. It does not sort, but its indexing was faster than the other products' sorting. We rate its speed Good.

Documentation: Smartware II comes with enough reading material for even the most hard-core manual reader — seven hardbound reference manuals and four other "small" books. In general, each applications reference is complete,

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FEATURES
Integrated Software

	Enable/ OA Version 3.0	Framework III Version 1.1	Microsoft Works Version 1.05	PFS:First Choice Version 3.0	SmartWare II Version 1.0	Symphony Version 2.0
Spreadsheet						
Compatibility	Yes	Yes	Yes	Yes	Yes	Yes
Programmable macros(1)	Yes	Yes	No	No	Yes	Yes
3-D worksheet	Yes	No	No	No	No	No
Spreadsheet linking	Yes	Yes	No	No	Yes	No
Multiple font styles	Yes(2)	Yes	Yes	No	Yes	Yes
Word processor						
Auto formatting	Yes	Yes	Yes	Yes	Yes	Yes
Search and replace	Yes	Yes	Yes	Yes	Yes	Yes
Spelling checker	Yes	Yes	Yes	Yes	Yes	Yes
Embed ASCII codes	Yes	Yes	Yes	Yes	No	Yes
Multiple columns	Yes	Yes	No	No	Yes	No
Auto hyphenation	Yes	Yes	No	No	Yes	No
Embedding graphics	Yes	Yes	Yes	Yes	Yes	Yes
Auto table of contents	Yes	Yes(3)	No	No	Yes	Yes(3)
Auto index	Yes	No	No	No	Yes	No
Auto footnote	Yes	Yes	No	No	Yes	No
Widows/orphans	Yes	Yes	Yes	No	Yes	No
Database						
Multifield sorts	Yes	Yes(4)	Yes	Yes	Yes	Yes
Prints tabular reports	Yes	Yes	Yes	Yes	Yes	Yes
Prints column totals	Yes	Yes(5)	Yes	Yes	Yes	Yes(6)
Report handles subtotals	Yes	Yes(5)	Yes	Yes	Yes	Yes(6)
Selective report of subset	Yes	Yes	Yes	Yes	Yes	Yes
Read/write .DIF directly	No	Yes	No	No	Yes	No
Read/write .DBF directly	Yes	Yes	No	No	Yes	No
Totals on screen	Yes	Yes(5)	Yes	Yes	Yes	Yes(6)
Field ditto	Yes	No	Yes	Yes	Yes	No
Unlimited-length memo fields	Yes	Yes	No	Yes	Yes	No
User-definable data verification	Yes	Yes	No	No	Yes	Yes
Global search and replace	Yes	Yes	No	No	No	No
Relational abilities	Yes	No	No	No	Yes	No

(1) Programmable macros are defined as having conditional, iterative, and branching capabilities. (2) Enable/OA: Enhancement does not include numerals. (3) Framework and Symphony: Through outliner. (4) Framework III: Requires use of Fred programming language. (5) Framework III accomplishes totals by placing the database and spreadsheet in a containing frame. (6) Symphony accomplishes totals by viewing the database as a spreadsheet.

containing redundant introductory and general-interest information that minimises the need to refer to other volumes.

Unfortunately, important information is sometimes difficult to find, buried in the middle of a manual, or not present in the index. For example, critical information on the difference between .TXT (text) and .DOC (document) files within the word processor is not indexed under any reasonable heading. Often, information is indexed under the Smartware II command hierarchy name, not under a generic description of the feature. The spreadsheet has a feature called "map mode", but it is not indexed as such in the on-line help or printed documentation. (The vendor expects to ship soon a new version of the manual that corrects some of these problems.) On-line documentation is extensive, including error-message descriptions. The on-line help offers perhaps too much information, requiring a lot of reading to find out simple answers. However, it is better than too little. Balancing these pros and cons, we rate documentation Good.

Ease of learning: Although Smartware II comes with an on-line tutorial, it quickly becomes a repetitive press-this-button slide show. Even so, the various tutorial lessons constitute a Good guided tour to the Smartware modules.

Being able to view all menu options on the screen by pressing Esc or F2 is both an asset and a liability. It is an asset because by scrolling through the options, you might find the right one to use; it is a liability because the number of options can be overwhelming. Also, before one can truly master Smartware

II, it is important to learn how to use the PDL, and that is not a trivial task. However, the quality of the written manuals and the consistent user interface earn Smartware II a Good in ease of learning.

Ease of use: Smartware II's use of commands and keyboard shortcuts is one of the most efficient we have seen, allowing new users to find options fast and experienced users to cruise along without hesitation. A big frustration, though, is that Smartware does not automatically return you to your document after you finish with a command. Another annoyance is that during long operations, such as searching through a database index, Smartware II fails to display a "Please wait" message.

An unusual feature is Smartware II's capability to cram as many as 60 lines of 90 characters each on ordinary VGA display adaptors, a little less on EGA systems. This makes editing wide documents definitely easier — if a little tough on the eyes. At that size, though, the lack of mouse support becomes more noticeable.

Smartware II lets you keep several data files in memory at once, but they must all belong to the same application — a severe limitation, since it is natural to want to write a report while browsing through a database or spreadsheet.

Overall, the consistent user interface, coupled with the powerful PDL, earns ease of use a Very Good score.

Error handling: The program wins points right away with its on-line error-message documentation: If a message appears, simply press F1 and a lengthy description appears. The messages themselves are explicit, such as "Modem is not responding. Is the modem on? Are the switches set correctly?"

Smartware II offers all of the desired features: timed auto-saves, creation of backup copies of saved documents, warning before overwriting data, and offering to save data upon exit. Unlike most of its competitors, Smartware does not offer an undo; this lowers its grade for error handling to Very Good.

Value: Priced at $1,095, Smartware II is the best value among the high-end integrated packages. All of the modules are Very Good, and the consistent user interface, although designed for the power user, is easy enough for new users to handle. Smartware II beats the comparably priced competition: It offers more power than Symphony's limited word processor and database, is more intuitive than Enable/OA's confusing and varied menu structure, and has more features than Framework III. We rate Smartware II a Very Good value.

SYMPHONYII

VERSION 2

Sometimes referred to as Lotus' "other program" (though Lotus actually has some 11 product offerings in all), Symphony adds word processing, flat filing, and communications to a variant on 1-2-3's famous spreadsheet. Symphony is popular with corporate users who are sold on the benefits of the Lotus spreadsheet but also need to create and manage simple documents and databases.

Symphony revolves around a large "worksheet", which normally looks like a standard spreadsheet but can also look like a word processing document with each line of text assigned as a spreadsheet label or like a database with each record assigned to a single spreadsheet row.

Symphony also excels at integrating data. It is common to have more than one type of data within a single worksheet.: Documents may also be enhanced by including spreadsheet data, mail merges from database records, or even captured information from a communications session.

Also adding flexibility is the Symphony macro language, which can create complex programs with menus and conditional instructions. While Symphony may lack the sheer performance of Smartware II and Enable/OA, its familiarity built on 1-2-3 makes it appropriate for office-based spreadsheet users who want just a little more.

Performance: The architects of 1-2-3 applied their powerful spreadsheet technology in Symphony, Version 2.0. File-compatible with 1-2-3, Symphony has a full complement of financial, statistical, regression, table-lookup, and other functions, plus the powerful macro language, though it is not fully compatible with 1-2-3.

What is missing are hot links between separate spreadsheets and a 3-D capability. The spreadsheet also is pretty small, measuring only 256 by 8,196. Symphony meets the basic criteria and adds the flexibility of text highlighting, add-ins, and an auto-record macro language; we rate its spreadsheet Very Good.

Symphony 2.0's word processor is a vast improvement over the original, offering all of the basic functions necessary for creating and editing typical office documents, such as memos, letters, and short reports. It automatically produces a table of contents (through an outliner) and can mail merge letters with the database and proofread them with a spelling checker add-in. Symphony also performs right-margin justification but sometimes fails to keep the margins exactly straight. It is also easy to use spreadsheets as part of a word processing document.

Symphony's word processor is adequate for routine paperwork, with an extra or two. Overall, we rate it Good.

Symphony's database is essentially another view onto a spreadsheet; Symphony can project a view of each record as a separate screen. Better-than-average spreadsheet knowledge is necessary to perform many operations, such as creating custom report formats or setting up entry validations. Indeed, many database operations, such as anything other than the most simple reporting, require that the data be viewed as a spreadsheet table instead of as a database.

PC WORLD
PRODUCT SUMMARY

Symphony
Version 2.0

Company: Imagineering. Tel: (02) 697 8666. Fax: (02) 697 8670.

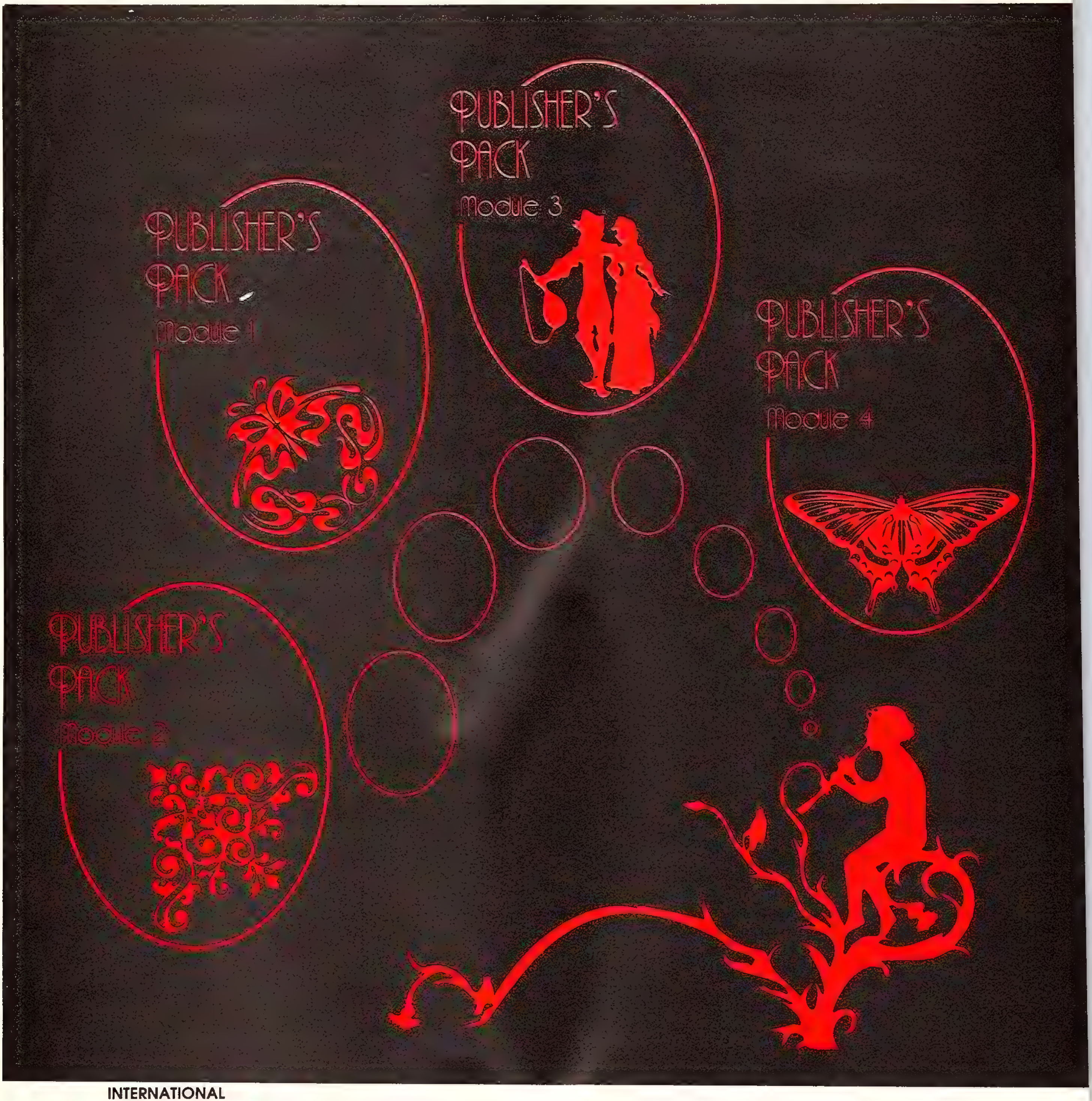
List Price: $1,165; network version, $1,250.

Requires: IBM PC, XT, AT, PS/2 or compatibles; 384K RAM; 512K RAM recommended, required for using spelling checker; two floppy drives; hard drive recommended.

Pros: Powerful spreadsheet; room to grow with third-party add-ins; well-integrated applications; good documentation.

Cons: Weak database; limited reporting capabilities; inadequate error handling.

Summary: Although Symphony is a professional-class spreadsheet, the rest of its applications are actually weaker than those found in the other personal integrated packages, making it barely a satisfactory value.



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The database performs multifield sorting, but it lacks relational capabilities and the capability to directly read .DIF or .DBF files and even to store large amounts of information (like Framework, all data are stored in RAM, in the worksheet). The database is most suitable for automating data entry into a spreadsheet or for gathering information for mail merges or other simple operations. Although Symphony's database offers all the basic functions, it is the weakest of all the higher-end integrated packages, especially since it requires considerable effort to print even the simplest reports. For this reason, we rate it Poor.

Symphony can emulate ANSI or VT-100 terminals using an included add-in. It supports Xmodem, Compuserve B, and Blast file transfers -- a Good choice for talking with microcomputers, on-line services, and mainframes, although Kermit would have been a nice addition.

Symphony also offers auto-dialing with Hayes-compatible modems. It can also automate logging in to a remote system, allowing you to preprogram simple "wait-for-this-and-then-send-that" scripts. What is lacking is a more complex script language, remote control of the computer through a BBS-style shell, and logging sessions to disk Overall, we rate communications Satisfactory.

Symphony's graphics capability, to nobody's surprise, is very much like 1-2-3's. Based on spreadsheet data, Symphony can draw the basic bar, line, pie, high-low-close, and x-y charts, using a variety of colours and patterns. These graphs can then be saved to disk as .PIC files or printed using the external Print Graph program — a holdover from the dark ages.

Also like 1-2-3, Symphony leaves some of its graphs enhancement to third-party add-ins or external programs. Symphony has no 3-D effects or freehand drawing. However, the

FEATURES
Integrated Software

	Enable/ OA Version 3.0	**Framework III** Version 1.1	**Microsoft Works** Version 1.05	**PFS:First Choice** Version 3.0	**SmartWare II** Version 1.0	**Symphony** Version 2.0
Communications						
Emulates ANSI	Yes	Yes	Yes	Yes	Yes	Yes
Emulates DEC VT 52/100	Yes	Yes	Yes	Yes	Yes	Yes
Emulates IBM 3101	No	Yes	No	No	No	No
Uses Xmodem	Yes	Yes	Yes	Yes	Yes	Yes
Uses Kermit	Yes	Yes	No	No	No	No
Full log to disk	Yes	Yes	Yes	Yes	No	No
Programmable scripts(1)	Yes	Yes	No	No	Yes	Yes
Remote control/BBS	No	Yes	No	No	Yes	No
Graphics						
Bar, line, pie charts	Yes	Yes	Yes	Yes	Yes	Yes
X-Y charts	Yes	Yes	Yes	Yes	Yes	Yes
High-low-close charts	Yes	Yes	Yes	Yes	Yes	Yes
Combined line/bar charts	Yes	Yes	Yes	Yes	Yes	Yes
Data links to spreadsheet	Yes	Yes	Yes	Yes	Yes	Yes
Flexible colours/patterns	Yes	No	Yes	No	Yes	Yes
Superimposing charts	Yes	Yes	Yes	Yes	Yes	No
Choose fonts/sizes	Yes	No	Yes	Yes	Yes	Yes
3-D graphic effects	Yes	No	No	No	Yes	No
Drop-shadow effects	Yes	No	No	No	No	Yes
Level of integration						
Embed spreadsheet in doc	Yes	Yes	Yes	Yes	Yes	Yes
Mail merge	Yes	Yes	Yes	Yes	Yes	Yes
Database into doc	Yes	Yes	Yes	No(2)	Yes	Yes
Automatic updating	Yes	Yes	Yes	No	No	Yes
Multiple open apps	Yes	Yes	Yes	No	No	Yes
Multiple open files	Yes	Yes	Yes	No	Yes	No
Multiple windows	Yes	Yes	No	No	Yes	Yes
Run-time version	No $1,550	No	No	No	No	
LAN version	Included	$1,550	Yes(3)	No	$375	Yes(4)
Extended/expanded memory	Extended	Both	No	No	Expanded	Expanded

(1) Programmable scripts are defined as having conditional, iterative, and branching capabilities.
(2) Cut and paste only
(3) Microsoft Works: $295 for server; $150 per node.
(4) LAN version expected by end of September. Price to be $1,250.

included Allways add-in allows shadowing effects and embedding graphics into documents or spreadsheets.

Symphony is fine for creating the basic business graph, but do not plan on using it to create award-winning presentations. We rate graphics Good.

Symphony does a commendable job with integration. It is simple to include spreadsheets in documents, implement mail merges, and to copy databases into the spreadsheet — since it is one and the same. Limited to the contents of a single worksheet in memory, you can examine multiple spreadsheets, documents, and databases easily. Symphony can even split the screen into several windows, each showing its own view of the worksheet. However, there is no way to link muliple worksheets, which cuts down on flexibility. We rate level of integration Very Good.

Symphony was fast at some benchmark tests but was the slowest at integration after Framework. We rate speed Satisfactory.

Documentation: Symphony comes in two loose-leaf binders, each with an index to both books. There is also a quick-reference pamphlet.

The user's guide is extremely easy to read, well-organised, and contains plenty of examples and keystroke-by-keystroke instructions. The reference section is equally well-written, although hardware issues like the 80-column-by4line VGA mode are barely covered. Symphony also includes context-sensitive on-line help. It even includes a tutorial add-in. Symphony's documentation is Very Good.

Ease of learning: Symphony's written and electronic documentation do a lot to help new users get started. The slash-bar command structure, although not as intuitive as the pull-down menu, is not difficult to master and has become something of a standard. It does not take long to become familiar with basic spreadsheet operations or the simple word processor.

The database and graphics modules, on the other hand, require considerable spreadsheet experience. Setting up databases, printing graphs, and running reports are not trivial exercises. And Symphony macros are not for the faint of heart. It is not tough to get started with Symphony, but it takes work to master its intricacies. We rate ease of learning Satisfactory.

Ease of use: Symphony's consistent user interface and clear use of function keys are to its credit. However, it does not support a mouse and reconfiguring hardware is done by running a separate program from DOS.

Without the keyboard templates or an eidetic memory, it is difficult to keep track of the function-key definitions. But once mastered, Symphony's slash-bar user interface is fast and easy to use, especially for touch typists.

The program offers a treat with its 80-column-by 34 row display on VGA monitors. You can access a DOS shell or run external applications from within Symphony by using an add-in included with the package. One frustrating feature is that Symphony displays small windows containing various settings, such as for communications. You can see the various configurations, such as for data speed and parity, all lined up in a row, but you cannot move the cursor down and change them. You must call up the individual options, one at a time. On balance, we rate Symphony Good in the ease-of-use category.

Error handling: Symphony suffers from all the same error-handling lapses of the earlier versions of 1-2-3. It has no undo or auto-save or automatic creation of backup files. When you try to exit, Symphony asks, "End Symphony session? (Select 'No' if your work is not saved.)" You see this same message whether the spreadsheet is changed or not. Symphony does not seem to care about data safety; we rate error handling poor.

Value: Symphony has too many weaknesses to justify its $1,165 price. It is the most expensive of the products tested. Instead of a truly integrated software package, it is a powerful spreadsheet with the capability to perform simple word processing, database, and communications tasks. If that is all you are looking for, fine; Symphony costs only a few hundred dollars more than Lotus' other spreadsheet, 1-2-3. But if you want a more balanced, robust combination of applications, you will find a better deal with Smartware II and Framework III. We barely rate Symphony's value Satisfactory.

EXECUTIVE SUMMARY

PC WORLD
TEST CENTRE
CHOICE
SmartWare II

Our choice in the professional class is SmartWare II. Its individual applications are as powerful as any we have looked at, and they are easy to learn and to use. Data and user interface integration is well thought out, and the unique Project Development Language makes it easy for power users to automate tasks. SmartWare II also includes a few handy extras, such as its capability to print outline fonts on nearly any graphics printer. Priced at $1,095, it is the best value in its class.

Close behind is Framework III. Nearly a cult favourite, Framework III's desktop-style user interface and frame metaphor offer a lot of power for users willing to take the time to understand it (and willing to add some EMS memory to speed it up). for the advanced user. Framework III does not offer the most features, but at $1,095 it is a great value if you are looking for power combined with easy-to-learn pull-down menus and visual interfaces.

Enable/OA has potential but does not quite pull it off. Many of the program's applications are more powerful than any competitor, but the program acts like a collection of stand-alone programs running from a common menu.

It is also difficult to recommend Symphony. Outwardly, this integrated package looks like Lotus 1-2-3, Release 2.01 with a few word processing, database, and communications features thrown in; other than the spreadsheet, in our opinion, none of the application offers enough features to justify its $1,165 price tag, even though it is only about $100 more than the other high-end products.

The best personal integrated-software value is Microsoft Works, priced at $295. Microsoft Works offers good, solid applications, most notably word processing and graphics. The entire program is well-integrated. It is a snap to learn and use, it is the best option and at a good price.

At the bottom of the list is PFS:First Choice. Priced at $253, many of First Choice's applications are inferior to those provided in Microsoft Works and are poorly integrated besides.

By Nicholas Petreley

Reflex 2.0 adds disk access capability, "object" design

Version 2.0 of the flat-file database manager Reflex is the latest Borland International product to rub elbows with object orientation, a hot property these days. This and a long list of improvements over Version 1.1 make Reflex 2.0 an interesting reprise of what was already a good product.

Unfortunately, Reflex's new features do not quite add up to the excellent release the vendor could have made with some additional modifications.

The program is still missing some of the same things it has always lacked, and these cause problems despite the improvements.

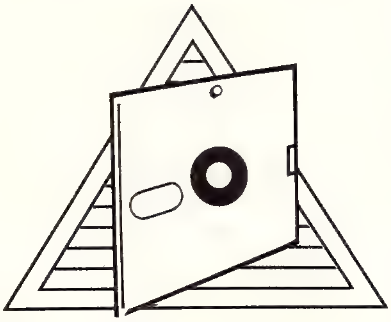
FEATURES

Reflex is a graphics-based flat-file data analysis tool, though it is better described as an alternative for people who have been trying to use their spreadsheets like a database.

Reflex 2.0 is good news for Lotus 1-2-3 users. It will require a short learning curve, since it has many similar functions and operating characteristics. It also will handle a lot more data than Lotus 1-2-3, Version 2 — up to 65,000 records or 32Mb, whichever comes first.

For Reflex 1.1 users, there is good news and bad news. The good news is that Reflex 2.0 does not load all its data into memory, so you will not be limited by the amount of RAM in your machine, as you were in Reflex 1.1. The bad news is that it has not added indexing to its data handling to compensate for the increasing disk access time.

A long list of improvements has improved Reflex, but this flat-file database still lacks features necessary for optimum performance



This version also lacks macro capability, but it does add some impressive graphics capabilities to its long list of improvements. For instance, Reflex 2.0 is now mouse driven, for users who desire this option. Combined with the addition of more features for form design, Reflex is more capable than ever of designing custom data entry screens. It also lets you apply a query filter to a cross tab and it expands its ability to use formulas in each view.

Reflex maintains speed despite these new features, according to Borland, through an object-oriented design called "virtual real-time object-oriented memory manager" (VROOMM). VROOMM structures the program into small objects, usually 2K to 4K in size, which are loaded into memory only as needed for efficiency. However, the VROOMM design and another intended speed booster, asynchronous disk input/output, do not seem to produce the desired effects.

While Reflex, Version 2.0 represents a substantial improvement over Version 1.1, it fails to go the whole way, hampered by its lack of indexing and data recovery features, and a few minor user interface oversights.

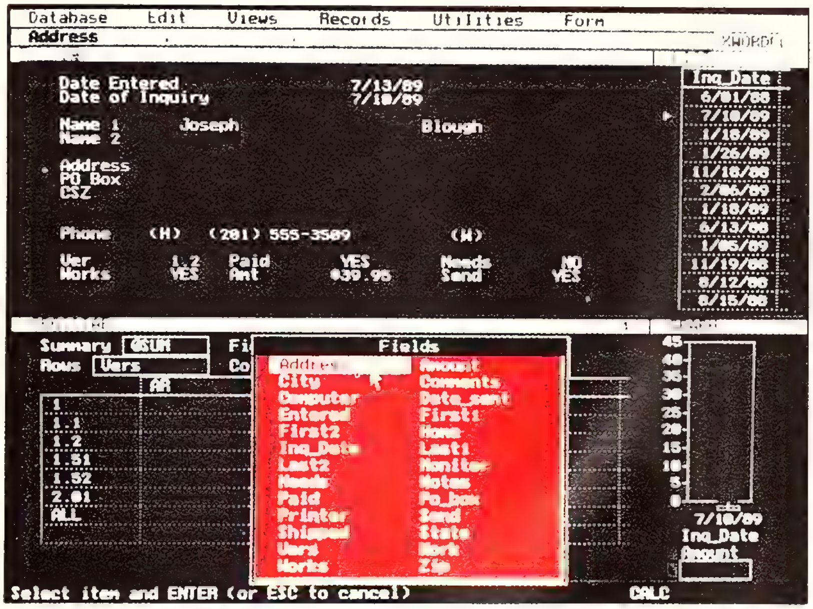
PERFORMANCE

Reflex offers the full gamut of data types, including text fields, numeric, integer, date, and calculated fields. Although Reflex is clearly a database oriented product, it has some features akin to spreadsheets.

One spreadsheet-like approach to data handling is the way Reflex treats calculated fields, aside from the obvious similarities between its functions and Lotus 1-2-3. You can tell Reflex to allow you to type in what it calls a "local" value over a formula. This overrides any formula you may have for that field, much like replacing a formula in a spreadsheet cell with a value. The only difference here is that you do not lose the formula, as you would in the spreadsheet.

You can also have Reflex calculate a value and treat the result as a local value that overrides the formula. This is similar to pressing the "calc" key in 1-2-3 while the formula is still in "edit" mode. Finally, you can protect a calculated field from having any local value replacing it. Having a local value capability gives you the flexibility to customise the database better; for example, if your database used a standard profit margin to calculate the retail price for a set of products, you could change the price of one product and leave the

REFLEX 2.0



Date Entered 7/13/89
Date of Inquiry 7/10/89
Name 1 Joseph Blough
Name 2
Address
PO Box
CSZ
Phone (H) (201) 555-3509 (W)
Ver 1.2 Paid YES Needs NO
Works YES Amt $39.95 Send YES

Select item and ENTER (or ESC to cancel)

formula for the rest of the prices intact.

You can create and customise data entry forms and data tables, and view them individually, or place them simultaneously on the same screen. Sizing or re-locating fields and labels is a simple process. It is just as easy to delete columns from a table view (the actual data are left unaffected), move, and re-size them.

Like a spreadsheet, Reflex lacks a few conveniences for data entry. For instance, you cannot enter a value into a field and have that value massaged and re-entered into the same field. Attempts to do so will only elicit a "circular reference" error message.

Nevertheless, Reflex has the data entry capabilities where it counts, and it goes a little beyond in a few areas. We rate data entry Very Good.

Reflex offers quick columnar reports as well as quick form-based reports. Reports are not exactly the WYSIWYG variety, though it is easy to visualise the report from the definition, and reports can be previewed before sending them to the printer.

Unlike Q&A, Reflex will grab data only from the current data file; it has no multi-file look-up functions. It does go beyond Rapidfile and PFS:Professional File, however, by offering a few functions allowing you to look up data from the previous record, first record in a group, or last record in a group when printing a report. This lets you write formulas that calculate a value based on information in more than one record. You can also work with summaries of summaries. For example, you could derive a team batting average from a series of individual batting averages. Mail merge is now possible with Reflex. and a crude text editor is now included for this and other purposes.

Virtually any graphics display can be printed. You can even print a dialogue box if it suits you, as it may if you want to document things like query specifications.

Reflex will produce a hard copy of almost anything you want from your data. We rate reporting as Very Good, an improvement over Version 1.1's score of Good.

Nobody can match Q&A for its Intelligent Assistant when it comes to querying a flat-file database. Reflex does not even attempt the match, but it does a handsome job of performing queries in the traditional sense. To perform a query, you bring up a list of your data fields and enter the appropriate formulas in an adjacent column. "OR" conditions are placed in an additional series of columns, and "AND" conditions are placed in the same column.

The query can be applied to the database as a filter, which will affect all subsequent graph views, cross-tabs, and reports. Reflex will automatically update the database based on your manipulations of the filtered data.

Reflex allows you to sort your data on up to five fields simultaneously, with each field being individually ordered in ascending or descending order. As one would expect from a data analysis package, we found the query capabilities quite robust. We rate querying Very Good.

Reflex will automatically import or export Reflex, Version 1.1 files. Other file import and export types include dBase; DIF; Lotus, Versions 1A and 2; Quattro; Paradox; Symphony; PFS; and ASCII. Reflex reliably imported files for our tests and did it the fastest among the competition. We therefore rate import/export Very Good.

But for a few gaps, Reflex's functions available for calculations would rival the better spreadsheets. Reflex has four of the popular financial functions including future value, compound growth rate, present value, and loan payment. It has a typical set of trigonometric functions. Reflex also has one of the most comprehensive lists of date manipulation functions we have seen in a database — a real plus for formatting dates to appear in graphs. In addition, Reflex has some logical functions, such as @case and @if for decision making when performing calculations. The rest of the list of functions includes the rudimentary special functions (such as @na, @iserr, and the like), statistical functions, and text formatting functions. Reflex 2.0 has a respectable collection of string formatting features, though we missed Lotus' simple text function @proper. We rate functions Very Good.

Reflex is outfitted with asynchronous disk input/output, which allows you to perform a separate task, such as screen drawing, while the program

BENCHMARKS
Flat-file databases 5,000 record test

	Professional File 2.0	Q&A 3.0	Reflex 2.0	Reflex 1.1
Indexed access	Immediate	Immediate	N/A[1]	N/A[2]
Unindexed access	0:53	0:13	0:19	N/A[2]
File sort	1:16	0:31	2:52	N/A[2]
File index	1:34	4:41	N/A[1]	N/A[2]
Global replace	0:56	0:34	1:46	N/A[2]
Indexed append	7:42	4:32	N/A[1]	N/A[2]
ASCII import	7:29	11:57	3:11	N/A[2]

Times in minutes:seconds. File size: 5,000 records, 112 characters per record. Test system: 8MHz Compaq 286 with 640K of memory and a 42Mb hard drive (drive type 17, disk access time: 28 milliseconds). [1]Reflex has no indexing capability. [2]Reflex 1.1 maintains data entirely in RAM and is therefore unable to hold test file; we ran out of memory at about 2,500 records.

accesses a disk. It automatically detects what type of disk you are using and decides whether to use asynchronous I/O. (Asynchronous I/O will not work with certain controllers made by Scientific Micro Systems.)

The result of asynchronous I/O should be increased speed with most operations since Reflex does not have to give exclusive attention to a disk when it receives or saves data.

The product's new VROOMM technology also is characterised as capable of improving speed. In practice, however, we could not determine the speed improvement, if any. At 1,000 records, Reflex 2.0 is slower than Reflex 1.0, a smaller program capable of fitting the records entirely into memory.

We were able to test 5,000 records with this version of Reflex, thanks to its new capability of working with disk-based files. (See benchmark tables.) Here Reflex 2.0 is slower in most tests than Professional File and Q&A. At 5,000 records, Reflex 2.0 is slower than Q&A with non-indexed record access and it offers no indexed access capability. Reflex 2.0 badly needs indexing; 19 seconds is too long to wait for record access. What saves Reflex is its analytical powers: You have to wait to retrieve records, but where this would end work for another database, with Reflex you can go on to cross-tab and graph the results. As is our policy, we lower the grade one level if a product does not offer indexed access. Our grade for Reflex's record access speed is Satisfactory. Reflex's speed in setup functions is likewise rated Satisfactory.

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REFLEX 2.0

PC WORLD

REPORT CARD

Flat-file database
Reflex Version 2.0

CRITERION	SCORE
Performance	
Data entry	Very Good
Reporting	Very Good
Querying	Very Good
Import/export	Very Good
Functions	Very Good
Speed	
Record access	Satisfactory
Setup functions	Satisfactory
Documentation	Excellent
Ease of learning	Very Good
Ease of use	Very Good
Error handling	Poor
Support policies	Very Good
Value	Very Good

PRODUCT SUMMARY

Company: Tech Pacific, Unit 1, City South Business Park, Epsom Rd, Rosebery NSW 2018. Tel: (02) 697 7111.
List price: $340.
Requires: IBM PC, XT, AT, PS/2, or compatible; MS-DOS 2.0 or later; 512K of RAM; hard disk drive; video card and graphics display.
Pros: Now disk-based, thus larger capacity; supports mouse.
Cons: Lacks indexing, so larger capacity means slower performance; lacks macro capabilities; poor data recovery.
Summary: Reflex's tremendous potential remains unfulfilled in this latest version, but it still boasts excellent graphical capability, multiple views, and fine analytic features.

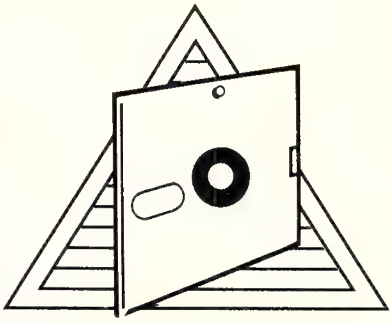
DOCUMENTATION

Borland documentation continues to improve with each new release of its product line. The Reflex manual is no exception to this trend. The tutorial and sample applications guide and the reference manual (a "getting started" manual is also included) are complete, comprehensive, have excellent indexes, and are a pleasure to follow. They even go a little beyond the call of duty and add a short DOS tutorial. We rate documentation as Excellent.

EASE OF LEARNING

Reflex does not have an on-line tutorial, which might present a bit of a problem for first time computer users, but most others will not miss it. A thick and comprehensive tutorial manual is provided, and although it is not as pleasant as the on-line variety, it is as thorough a coverage of Reflex's features as one could expect.

Since Reflex is consistent in operation from view to view, it will be a one step learning process for most people. Lotus users will have to do the least amount of re-learning to use Reflex. When designing a form, you enter labels much like you would in a Lotus spreadsheet, for example, although you will be forced to enter the preceding single quote yourself. Many of the same Lotus 1-2-3 @ functions are present, and the syntax of these functions is usually the same as you would find in Lotus. The functions get a workout regardless of which view you are in, whether it be form, graphics, or report — a plus for ease of learning. To get a sum for a field in a report, for example, you simply place an @sum function in the footer section.



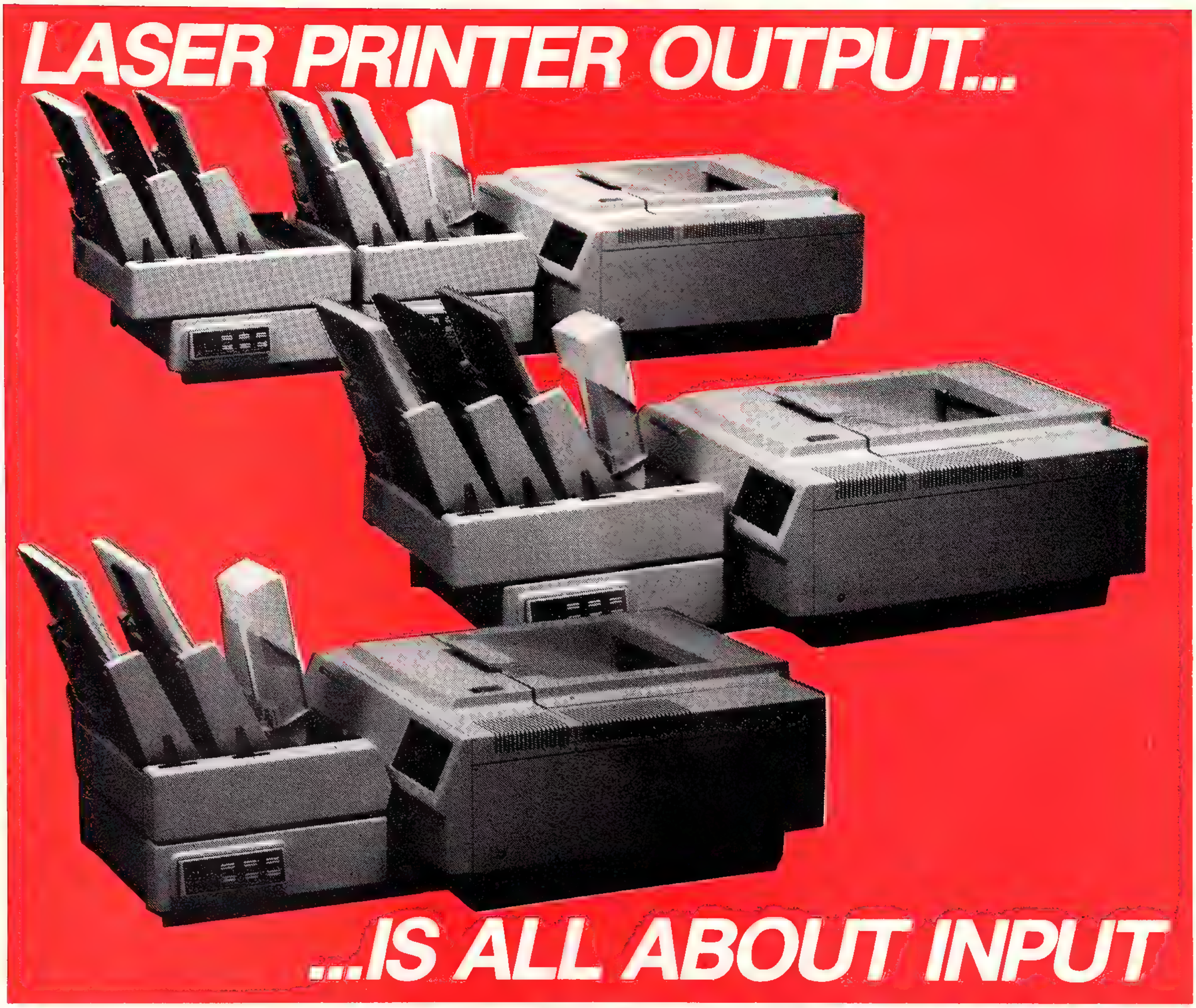
Reflex is ideal for Lotus users who have been trying to make a spreadsheet perform database tricks. For these users, learning will be no problem. For the rest, a little effort will go a long way, since what you learn can be applied across modules. We rate Reflex Very Good in ease of learning.

EASE OF USE

At times, Reflex is one of the easiest products in its category to use, providing some of the simplest means we have seen for accomplishing a given task. For example, Reflex requires a leading single quote before labels, much like Lotus. While troublesome, that extra keystroke buys you the option of treating a label or field as an object you can delete with one keystroke or easily drag around. Other products require many more steps to accomplish the same things.

Using a mouse with Reflex can be burdensome, which is a shame for a graphics based package. Moving and sizing fields on a form with a mouse is easy, but some tasks — such as changing screen colours, checking off selection boxes, or confirming an operation — require awkward or too many movements. No configuration option is available to adjust mouse speed or to change the Microsoft Mouse threshold that automatically doubles the speed for large movements.

As a whole, Reflex will be a cinch to use if you stick to the keyboard for most operations and use the mouse mainly for selecting from menus or for moving the cursor. Some simple conveniences were overlooked here, but the problems are minor. We rate ease of use Very Good.



A desk-top laser printer is a high performance machine. Depending on the model it will produce anything from 6 to 20 pages per minute and its productivity rises in direct proportion to the number of paper types available for automatic feeding.

So if you are only feeding your printer from one bin or maybe two you're only getting a fraction of its potential output maybe as little as one page per minute. Changing the paper renewing the supply, interrupting the printing queue, all this means stop start operation, disruption and low productivity.

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REFLEX 2.0

ERROR HANDLING

Reflex's asynchronous disk I/O feature can wreak havoc with data files when Reflex is run in anything but a strictly plain vanilla environment. For example, Reflex crashed our 386 machine in a Desqview window about every other time we ran it until we disabled the asynchronous I/O. The biggest problem with this was the side effect of the crash. If Reflex cannot close a data file for any reason, the file becomes corrupt and unusable. We found this to be true even if no changes were made to the file.

Reflex will provide a free file recovery utility if requested and will include it in the next release.

The lack of file recovery is serious, but is offset by an excellent list of error messages with accompanying explanations in the reference manual. However, we would like to see the problems ironed out, and Reflex made a bit more stable when used in anything other than the ideal environment. Until then, Reflex rates Poor in error handling.

SUPPORT

Tech Pacific provides unlimited telephone support, and the product is guaranteed. We rate support policies Very Good.

VALUE

It is hard to complain about a product that boasts so many improvements over its predecessor, yet that is what we find we must do. Reflex began the race from the starting line at Version 1.1, but in feature after feature it falls behind around the last bend. It offers the analytic power of a spreadsheet without the inherent data handling limitations of a spreadsheet, yet Lotus users who begin to veer toward Reflex will baulk at the lack of macro capability. It is strictly graphics based and is therefore ideally suited to the convenience of mouse based operation, yet it lacks the thoughtful placement of objects for the mouse to use. It expands its data handling beyond Reflex 1.1 to use both the disk and memory, but in the face of slower performance it still does not index data files. Our complaints about Reflex amount to a side door compliment to the product. If it were not as promising a database tool as it is, these deficiencies would not be as disturbing.

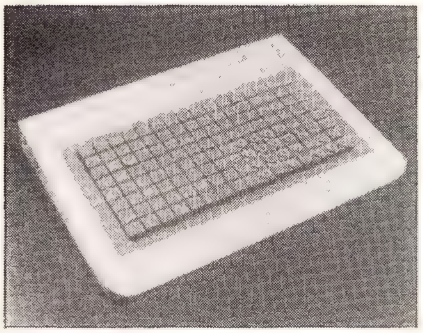
Despite its shortcomings it can be one of the best analytical tools for people who have been trying to make Lotus 1-2-3 act like a flat file database. Listing at $340, Reflex still rates as a Very Good value. **PC**

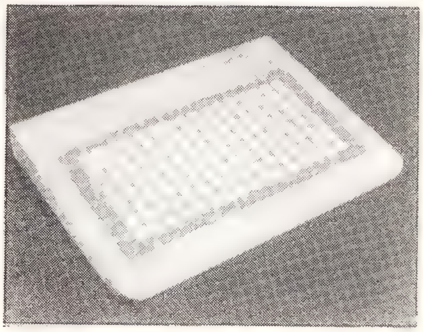
BENCHMARKS
Flat-file databases 1,000 record test

	Professional File 2.0	Q&A 3.0	Reflex 2.0	Reflex 1.1
Indexed access	Immediate	Immediate	N/A[1]	N/A[1]
Unindexed access	0:06	0:03	0:04	0:02
File sort	0:10	0:06	0:28	0:15
File index	0:21	0:43	N/A[1]	N/A[1]
Global replace	0:11	0:08	0:25	0:04
Indexed append	1:36	2:10	N/A[1]	N/A[1]
ASCII import	1:31	2:22	0:37	1:18
dBase import	0:45	1:58	0:31	0:59

Times in minutes:seconds. File size: 1,000 records, 112 characters per record. Test system: 8MHz Compaq 286 with 640K of memory and a 42Mb hard drive (drive type 17, disk access time: 28 milliseconds). [1]Reflex has no indexing capability.

Custom Keyboards





POZ Customer Display

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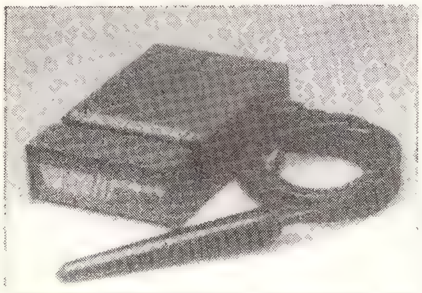
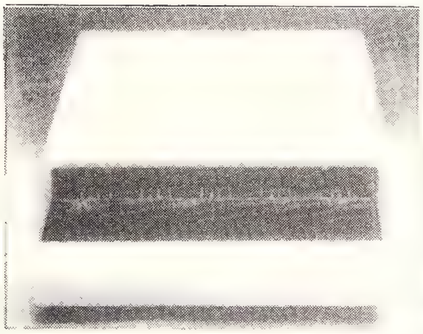


Cash Drawer



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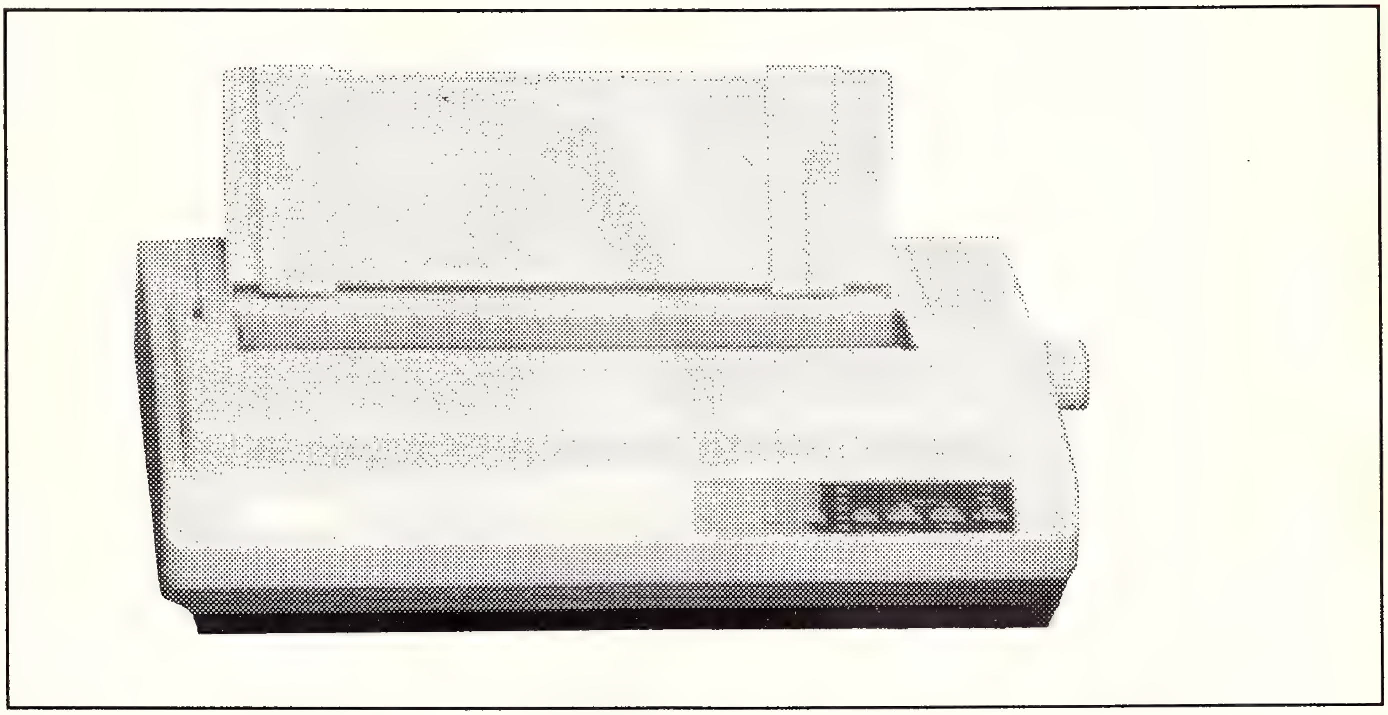
By Neil Atwood

STAR PRINTER

Fast 24-pin dot-matrix printers are the accepted norm in many offices today. The quality of their text is quite respectable and even their graphics output is regarded as sufficient for many situations. Neil Atwood looks at Star Micronics' newest release.

***

Star Micronics has sought to provide a simple approach to colour printing with the XB24-15



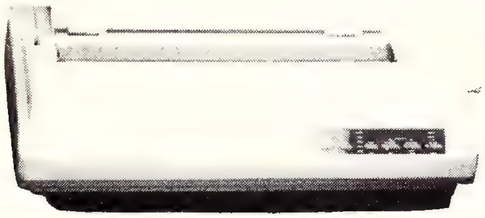
24-pin printer adds colour capabilities

The top end of the dot-matrix market, where 24-pin printers dominate, is well and truly alive, even though improvement in these printers has been evolutionary rather than revolutionary. Pricing has probably had as much as anything to do with the shift to 24-pin design. The cost of dot-matrix printers has tended to stabilise or has even gone down in real terms, while the number of features has gone up significantly. The Star XB24-15 is a good example. With a recommended price tag around the $1,649 excluding tax, the new Star is around the middle to upper end of the price range while boasting some top-of-the-range features.

FEATURES

The XB24-15 is a wide-carriage printer, rated at 200cps in draft and 67cps in LQ mode. The XB has three print modes ? draft, letter-quality and super letter-quality. It has the best selection of built-in typefaces that we have seen for some time. They include Courier, Prestige, Times Roman, Helvetica, Script, Cinema, TW Light, OCR-A, OCR-B, Letter-Gothic, Blippo, Orator, Optimo, Code 39 (bar code) and Greek! The first seven mentioned are directly selectable from the front panel, the rest via software. There are the usual range of pitches and type sizes ranging from 10 to 20cpi, and up to quad-sized lettering. Emphasised, double-strike, underlining, overlining, subscript, superscript, outline, shadow, outline & shadow, and italics are all available in all fonts. The XB24-15 is compatible with the Epson LQ-1050 and the IBM Proprinter.

In the area of paper-handling facilities, the Star really shines. Push tractor and single-sheet feed is standard, with an automatic cut sheet feeder as an option. The tractor has a zero-inch tear off facility to save on continuous stationery and the single sheet feeding is such that the very top and very bottom of the sheet is usable. Paper parking is standard for easy switching between continuous and single-sheet use. Selecting from the XB's many options is simplified by a clever memory switch facility which allows comprehensive programming of the printer from the front panel. Extra RAM or fonts can be added via an IC card slot, and last but certainly not least is the ability to print in seven colours.



> *The tractor has a zero-inch tear off facility to save onm continuous stationary and the single sheet feeding is such that the very top and very bottom of the sheet are usable*

SETUP

The XB24-15 is no more complex to set up and get working than any other dot-matrix printer. The only components to install are the ribbon, the platen knob, the paper guide and the connection to the computer. That done, the printer is ready to be configured for use. A small block of DIP switches handles most of the "permanent" configuration such as emulation, character set and the like. Usually, these are set once and then forgotten — until a change of emulation or a foreign language is required. Using the tractor feed is straightforward once paper alignment has been sorted out. The single-sheet feed is a breeze to use: drop a sheet between the guides, hit the paper feed switch and the paper is rolled in to the required top of form position. The paper bail flips back and forth as required by the printer. The whole action is smooth and very reliable. Setup is rated as Very Good.

EASE OF USE

Day-to-day use of the XB is easy. Like most up-market printers, the XB boasts a sophisticated front panel that gives access to many of the printers' features. Fonts can be quickly changed, paper can be fed rapidly, and there is a quiet mode that can be switched on or off without needing to go off line. The panel stops short of having an LCD display to aid in programming the system, but rather employs an unusual approach which many will find less intimidating. When entering Memory Switch mode, the printer will print a line of options — a menu if you like — and then roll the paper up into view. At this point, two of the switches on the front panel, those with arrows beneath them, can be used to select one of the options. When one of the switches is pressed, the printhead moves in the direction the arrow indicates to stop under the next option. Press another switch on the panel, and that option is selected. The selected options are shown on the page by an asterisk printed next to them. The printer then moves on to print the next series of options and so on until all have been selected. The combination of designated options is now the default and will be operative even after powering down. It is a neat system that proves very easy to use and has the bonus of leaving the

PC WORLD

REPORT CARD

Star XB-15 24-pin printer

CRITERION	SCORE
Performance	Very Good
Documentation	Good
Ease of use	Excellent
Setup	Very Good
Serviceability	Satisfactory
Value	Satisfactory

PRODUCT SUMMARY

Company: Star Micronics Pty Ltd,
Unit A/107-115 Asquith St,
Silverwater, NSW 2141
Tel: (02) 748 4300

List price: $1,649 ex tax.

Required: For any computer with standard parallel port.

Pros: Excellent print quality, versatile front panel, effective paper handling, simple to use. Cons: Relatively pricey, slightly flimsy construction.

Summary: A competent, medium-speed 24-pin dot-matrix printer with excellent print quality. Paper handling features are easy to use and reliable. Programmable front panel is versatile effective.

user with a printed record of what options are current.

The use of colour in dot-matrix printing has never been standardised. Star has sought to get around this by providing a simple approach to colour printing with the XB24-15. If software is able to drive the Epson colour printers, it will probably drive the Star in colour quite happily. However, only a small number of application are "colour-wise". Star has enabled colour text to be printed by a simple code to be embedded in the text concerned. The characters: "((C))" followed by a number between 0 and 6 will switch the printer to the colour designated by the number. The system is reliable and simple to use with virtually all word processor packages.

* * *

Another feature worthy of mention here is the printer's noise — or rather lack of it. Twenty-four-pin printers have a reputation for being howlers, especially in letter-quality mode. The Star is an exception. The design of the cover is such that the printer is rarely intrusive. Add to that the ""quiet" button which cuts noise down even further, and the very quiet fan that cuts in when actually printing and you have one subdued printer. Ease of use deserves an Excellent rating.

PERFORMANCE

Think of performance in reference to dot-matrix printers and two areas jump to mind — print speed and print quality. Traditionally, dot-matrix printers quote speed in characters per second at the rate that the print head can actually put letters on the paper. The figures do not account for moving the paper and time spent working out where the print head should move next. So, actual throughput can differ dramatically from the quoted cps figures. The XB24-15 quotes draft at 200cps and LQ at 67cps. We printed a one page document, single-spaced and with occasional italics and bold words. Not a scientific test at all, but one that approximates normal

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STAR PRINTER

* * *

use. In draft mode the page showed a throughput of 107cps, in letter-quality mode 49cps and in super-letter-quality mode 25cps. These figures should not cause distress — virtually all printer manufacturers quote in the same way. Our test simply gives an idea of what to expect in real use.

The print quality on the XB is very good. Even draft mode is very readable, although bold italic draft starts getting rather "jaggy". Letter-quality is clean and dense and super-letter-quality is just that little bit sharper still. Graphics printing showed none of the strange problems that the Star NX24-10 displayed. Printing was fast, but large areas of black or colour did reveal a typical dot-matrix streaking. That effect was in fact our only significant complaint with print quality. The standard ribbon tended to be on the faint side. A multi-strike carbon ribbon would really show what the Star is capable of. At the bottom line, most users are more concerned about how their documents look rather than ultimate speed. Combine the quality of print with the range of typefaces and the XB24-15 comes out with a Very Good rating in performance.

DOCUMENTATION

The documentation is the standard Star spiral-bound book some 130 pages long. At last, Star is including an index in its manuals. All the technical data about escape codes and such is there, along with hints about how best to link the printer in with popular PC software. Although somewhat unremarkable, the XB24-15 manual is better than others we have seen. It does include line drawings that are clear with all the essential information about operating the printer. Documentation rates as Good.

SERVICEABILITY

Here is perhaps the major area of reservation about the XB24-15. The printer has a somewhat flimsy feel to it. The plastic case feels thin and some of the internal metal components are distinctly fragile-looking. Now these are quite subjective assessments and, given considerate treatment, the printer may well give years of reliable life. Indeed, Star printers have something of a reputation for reliable running, it is just that considering the price range this printer sits in, it would be nice to see and feel something a little more substantial. The XB24-15 is covered by Star's usual 12-month warranty.

VALUE

As a versatile, rapid printer that produces excellent print quality, the XB is a welcome addition to an increasingly crowded end of the printer market. There are cheaper 24-pin printers around. The Panasonic KX-P1540 is one that is marginally faster and is more rugged in appearance, but it does not have the range of typefaces or some of the other sophisticated features of the Star. It sells for around the $1,100-$1,200 mark. However, the Star XB24-15 probably has the edge in print quality over most of its competitors, and that is what most buyers are concerned about. Value is rated as Satisfactory.

A note of warning — be wary if you are offered a Star printer with the same features, but with a different model designation. The XB24-15 is designed for Australian and New Zealand electrical standards. Identical printers with different model numbers are made for other markets and are unsafe for use in Australia. PC

Product details:
Star XB24-15 24-pin printer RRP $1,649 ex tax. For any computer with standard parallel port. Star Micronics Pty Ltd,
Unit A/107-115 Asquith St,
Silverwater, NSW 2141
Tel: (02) 748 4300

By Sherwin Levinson

386-based Toshiba T5200 laptop is a speed demon

Good display resolution and capacity for expansion more than compensates for its weight and high price.

The Toshiba T5200 comes with either a 40- or 100Mb hard

When it comes to speed, display resolution, and expandability, the 20MHz 386-based Toshiba T5200 is unparalleled among laptop and portable computers we have tested. The gas plasma display is particularly readable, though it does not provide the flexibility in control of colour emulation that we would like to see.

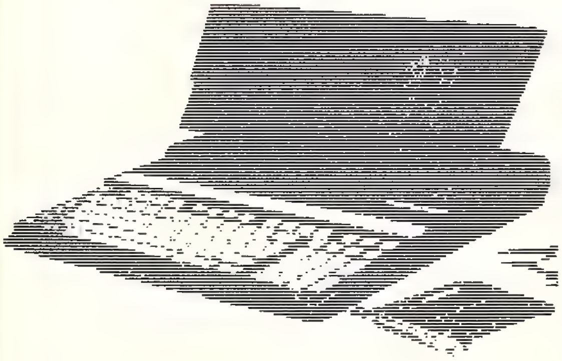
The keyboard is one of the most complete on any laptop, and it includes a separate numeric keypad (in a recent survey by our sister publication, InfoWorld, a separate numeric keypad was rated the most important extra feature in a laptop). Expansion slots can accommodate a full-length 16-bit card and a half-length eight-bit card. The only major drawback is its weight: The machine we tested, together with its power cord, weighs in at nearly 9kg.

The T5200 is a 20MHz version of the 16MHz T5100, with a few variations. It has the familiar clamshell design of a laptop, but, due to its weight, it competes with the heavier portables, such as the 20MHz IBM Model P70 and the 20MHz Compaq Portable 386 Model 40.

FEATURES

The T5200 includes an 80386 processor running at 20MHz, 2Mb of 32-bit user RAM, two serial ports, a VGA compatible RGB port, a socket for an 80387 numeric co-processor, and a combination parallel port/external disk drive port which supports an external 5in 360K floppy disk drive. Memory may be expanded to a total of 8Mb by adding up to three 2Mb expansion cards. All memory above 640K can be configured as extended or as LIM/EMS expanded memory in 0.5Mb increments; 96K can be reserved to hold a copy of ROM, improving performance since the RAM is much faster than ROM. Additionally, 32K of high-speed cache memory is included.

Two standard IBM PC expansion slots are provided, one for full-length eight- or 16-bit cards, one for half-length eight-bit cards. A proprietary Toshiba expansion slot is available as well, though there is not enough room to use both the Toshiba slot and the half-length XT slot at the same time. The proprietary slot can be used for such options as a 2,400bps modem or a five slot external expansion chassis that accommodates eight-bit expansion cards (it will not accommodate AT-style 16-bit expansion cards). No connection is provided for an external keyboard



or keypad.

Storage includes a 1.4Mb 3in disk drive and a 40Mb hard disk, with a 100Mb hard disk version also available. The built-in 22.8 by 17cm gas plasma display supports high resolution VGA graphics and operates in EGA and CGA modes as well; the same display driver can drive an external VGA monitor.

The accompanying software consists of MS-DOS 3.3, and a diagnostics and supplemental disk which has utilities designed for setting the system configuration and display modes. A memory manager included on the diagnostics disk allows users to configure extended memory in a variety of ways: It allows any amount of extended memory to be allocated as expanded memory and allows memory resident programs and device drivers to operate from this expanded memory rather than occupying part of your precious first 640K.

Toshiba has included some special security related features, too. The cover may be locked in place with a built-in combination lock, discouraging idle tampering. Unfortunately, the power switch remains exposed, so the casual vandal can do damage if you do not save your work. A sliding bracket allows the machine to be locked in place with a security cable, chain, or padlock.

The T5200 is large and heavy by laptop standards but remarkably small and lightweight given the power of its contents. We have not seen another laptop or portable computer that combines so many features in a single machine. The 100Mb version we tested, with 4Mb of RAM, weighed in at 8.6kg; with power cord and internal modem, the T5200 comes to an even 9.0kg. Competitors weigh less, though they also fall far short in performance, ranging up to 7.9kg for the Zenith TurbosPort 386. However, the IBM Model P70 we tested is heavier, weighing in at 9.5kg.

The T5200's solid grey case, with fold-out handle, measures 37cm wide, 39.6cm deep, and 9.9cm thick. This is almost identical to that of the TurbosPort 386. The size and weight of the T5200 machine are not undue burdens if you need the power it offers.

The Toshiba T5200 is scored using the criteria detailed in our recent Product Comparison on laptop computers (August 9, page 40).

For an explanation of benchmark scoring criteria, see "How we tested and scored laptop computers" (page 85) in that comparison.

PERFORMANCE

The Toshiba T5200 is fast, and it has an excellent display and a very good keyboard: It is about as good a performer as can be.

With a CPU index of 5.5, the T5200 is the fastest laptop we have tested; top honours were formerly held by the 16MHz Toshiba T5100. Random hard disk access also bettered the competitors we have tested, except for the Compaq SLT/286 in sequential access. The next fastest random access index was posted by both the Toshiba T5100 and by the Zenith TurbosPort 386. The T5200 is considerably faster than the IBM PS/2 Model P70 in every category, especially random access. Clearly, the T5200 rates an excellent score in each of the three performance benchmarks. The T5200 even

BENCHMARKS
386 portable computers

System	CPU	Hard disk Sequential Access	Hard disk Random Access
Toshiba T5200 (20MHz)	**5.5**	**3.9**	**3.4**
Compaq Portable 386 (20MHz)	4.3	1.4	2.7
IBM PS/2 Model P70 (20MHz)	4.2	2.3	0.8
Toshiba T5100 (16MHz)	3.2	1.6	2.4
Zenith TurbosPort 386 (12MHz)	2.8	2.5	2.4
Gridcase 1530 (16MHz)	2.1	1.0	2.0

Tests relative to the 6MHz (Model 099) IBM PC AT as 1.00. CPU test measures main processor performance; hard disk performance is tested for sequential and random data access. Higher numbers indicate better performance.

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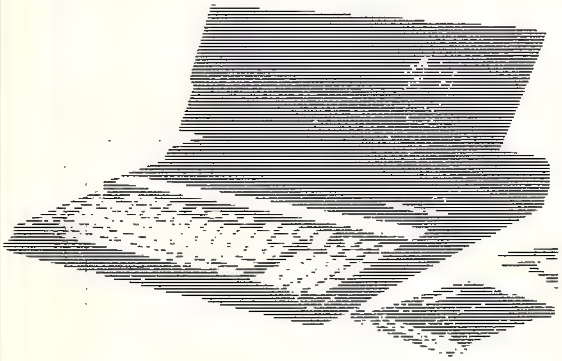


comes close to the top speed indexes posted by the 20MHz desktop 80386-based machines we have tested.

The T5200 has a crystalline display. The crisp, bright gas plasma display is one of the largest in the laptop arena (17 by 22.8cm) and has a resolution matched by only one other: the Compaq SLT/286. Unlike Toshiba's other gas plasma displays, the VGA compatible T5200 display has a completely dark background, providing excellent contrast. Unlike most flat panel displays, the display is actually bright enough to be annoying in a dimly lit room, so the brightness control is useful rather than purely ornamental. The so called Super VGA display controllers available for desktop computers do provide higher resolutions than the T5200's plain Jane version, but there is no better available on a laptop machine. The T5200's display is Excellent.

> *The only major drawback is its weight: The machine we tested, together with its power cord, weighs in at nearly 9kg*

Since Toshiba does not provide battery power for the T5200, battery life is rated Unacceptable.

The T5200 ran everything we tried flawlessly, including Microsoft Flight Simulator (in CGA mode), Crosstalk Mark 4, Procomm 2.4.2, Symphony 1.2, Software Carousel 2.02, Desqview 2.24, SideKick 1.56A, WordStar 5.0, WordPerfect 5.0, Prime Time 1.2, Fastback Plus, Windows/286, Windows/386, and PageMaker 3.0. We had no problem with the display as we switched among CGA, EGA, and VGA modes. Software compatibility is Excellent.

The T5200's 91-key keyboard is as complete as that of any laptop we have seen, with dual oversized Control and Alt keys and a separate 16-key numeric pad. It could be made more complete only by adding additional separate cursor keys, making it a full 101-key enhanced keyboard. The layout and feel are impressive. The only disappointment is that there is no provision for attaching an external keyboard. Overall, we rate the keyboard Very Good.

DOCUMENTATION

The T5200's documentation consists of three manuals and a First Time setup kit, all packaged in a handy slipcase.

The setup kit includes an MS DOS quick reference card, warranty and service information, MS-DOS disks, an on-line help disk, and the First Time setup booklet.

The Portable Companion, a thin, lightweight volume, covers all the essentials of ordinary operations, including the most common DOS commands. Attention to detail and generous use of illustrations are standard here and in the reference manual. The MS-DOS manual includes sample usage and output for virtually every command. Tables of contents and indexes are standard.

Toshiba continues to set an example for others to follow on this score, and we rate documentation Excellent.

PC WORLD
REPORT CARD
LAPTOP COMPUTERS
Toshiba T5200

CRITERION	SCORE
Performance	
CPU speed	Excellent
Disk access Sequential access	Excellent
Random access	Excellent
Screen readability	Excellent
Battery life	Unacceptable
Software compatibility	Excellent
Keyboard	Very Good
Documentation	Excellent
Setup	Very Good
Ease of use	Good
Service Workmanship	Very Good
Support policies	Very Good
Value	Good

PRODUCT SUMMARY

Company: Toshiba Australia, 84-92 Talavera Rd, North Ryde, NSW 2113. Tel: (02) 887 3322.

List price: $7,699 (base price).

Features: 20MHz 80386 CPU; two serial ports, one parallel port; operating system: MS-DOS 3.30.

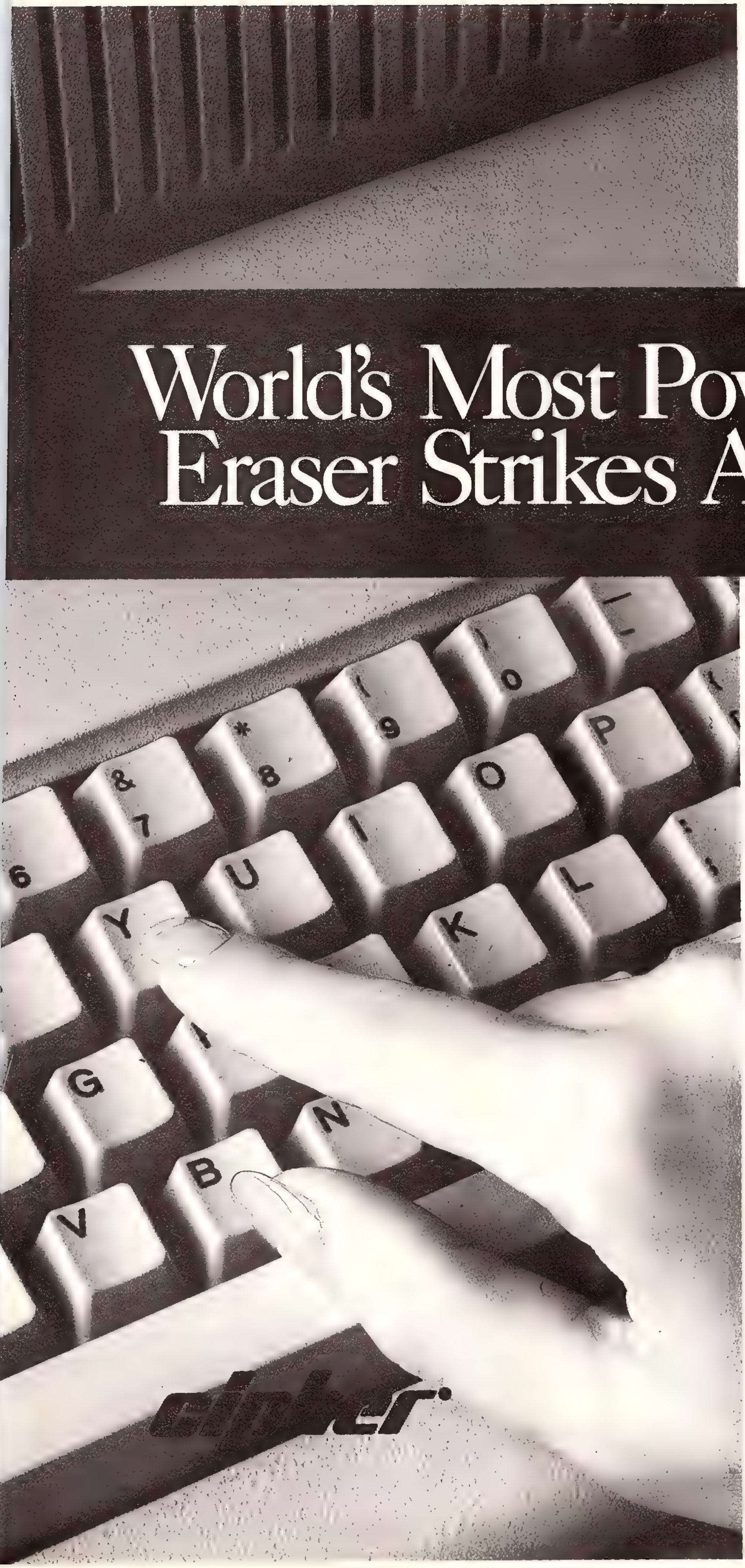
Peripherals: Gas plasma display; VGA; keyboard with separate numeric keypad; external 5in 360K floppy ports; expansion slots for 2,400bps modem; up to four 2Mb extended memory cards; 80387 co-processor socket.

Storage and Memory: 40- or 100Mb hard disk; 1.4Mb 3in floppy.

Pros: Very fast; separate numeric keypad; VGA display; excellent support policies.

Cons: Relatively heavy; no battery operation.

Summary: Though it is heavy, this is the fastest laptop or portable we have tested at two of our three speed indexes; it also excels at display resolution and expandability.



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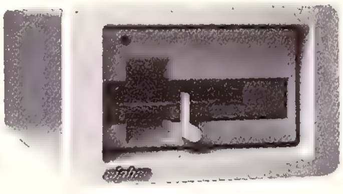

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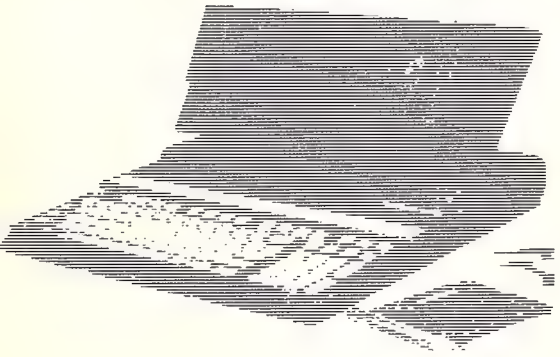
SETUP

Given the phenomenal documentation, setup is a breeze. While you do need to partition and format the hard disk and copy the operating system over to it, the whole operation is as painless as can be, since everything you need, including the disks, is included in the readily identifiable "The First Time box".

Adding expansion cards takes about as long as it does with a desktop machine. You need to remove 10 screws to get to the standard expansion slots, though the Toshiba proprietary slot can be accessed by removing just two screws.

Adding memory or a numeric co-processor is relatively easy, though not as simple as with some less powerful machines like the Zenith SupersPort 286. To access the system board, where the memory board and co-processor socket are located, four screws must be removed to allow removal of the keyboard, then two more screws allow removal of an aluminium shielding plate. Once these steps have been performed, a numeric co-processor may be plugged in, or by removing three more screws, the memory board may be removed. Memory expansion modules plug readily into the memory board. Initial setup could be easier only if the hard disk came already prepared. Adding options is not quite as easy as it could be but is acceptable. We rate setup Very Good.



SERVICE

The speed, display, keyboard quality, and flexibility of the T5200 make it a joy to use. The on-line help is top notch and addresses hardware problems as well as problems with included software. The weight and size of the machine, while extreme for a laptop, are acceptable for one with this level of power and flexibility.

The Toshiba T5200 is fast, and it has an excellent display and a very good keyboard: It is about as good a performer as can be

We do have one beef, though. While other Toshiba machines, such as the T3100, T1600, and T5100, provide utility programs for defining the way colours are mapped to the display, the T5200 provides no such capability. As a result, it is sometimes difficult or impossible to use software that is configured for a colour display.

The only solution in such cases is to re-configure the software to use colour combinations that provide adequate contrast on the Toshiba T5200's plasma display.

The superlative speed, display, keyboard, expansion slots, and on-line help are somewhat offset by the lack of on the fly adjustment to colour mapping, the relatively heavy weight, and large size. Balancing these considerations, ease of use is still Good.

SERVICE

The T5200's case is sturdy, the display hinge solid, all components well-shielded, and internal layout clean and without any visible patches. The display hinge cover did not fit quite flush, and there was no cover for the connectors on the back end of the machine; they could be damaged by setting the machine down on an uneven surface. These issues are minor, though, and workmanship is rated Very Good.

Toshiba's support includes a one-year warranty and repairs are carried out by Honeywell. Selected dealers and Toshiba provide free technical support, and Toshiba provides a toll free hotline. Support policies are rated Very Good.

EASE OF USE

The T5200 lists for $11,999 with a 40Mb hard disk and 2Mb of RAM. Comparably equipped, the Toshiba T5100 lists for $8,999. The primary differences between the T5200 and the T5100 are that the T5100 runs at 16MHz as opposed to 20MHz, is expandable to 4Mb instead of eight, and has no separate numeric keypad.

The Zenith TurbosPort 386, with a similar configuration, has a list price of $10,999. The IBM Model P70 with a 60Mb hard disk and 4Mb of RAM has a base price of $12,633.

The T5200 is well in line with other 386 portables but is considerably more expensive than both 20MHz 386-based desktops and 286-based laptops. Considering the price of the competition and the superior features and performance offered by the Toshiba T5200, we rate this machine a Good value. **PC**

DTP DUEL

By Galen Gruman

Choose Your Weapons

PC World umpires the duel of the PC desktop publishing giants: Xerox Ventura Publisher v Aldus PageMaker

At last count, there were nearly 20 desktop publishing programs for MS DOS PCs, compared with about half a dozen for the Macintosh. Yet only two years ago this application area was all but locked up by Mac vendors. Desktop publishing has flourished on PCs because millions of DOS systems are installed, graphical environments are now established, and the myriad user niches encourage the development of specialised publishing programs for each niche.

On the high end, there are the two best known PC desktop publishing programs -- Aldus PageMaker and Xerox Ventura Publisher. Also at the high end, specialty packages include Digital Composition's DB Publisher for database publishing and IBM's Interleaf Publisher for highly complex,"departmental" documentation.

In the mid-range market, two programs are designed for business communicators who shy away from mouse-driven WYSIWYG programs: IMSI Publisher and Ashton-Tate's text-oriented Byline. Three WYSIWYG mid-range programs also stand out: Digital Research's GEM Desktop Publisher, Timeworks' Publish-It, and Springboard Publisher.

The low-end market is packed with prominent programs, including Springboard Publishing's Newsroom and Newsroom Pro, Software Publishing's PFS:First Publisher, and Timeworks' Publish-It Lite.

There is no shortage of desktop publishing applications for PCs. And new programs seem to appear all the time, especially add-ons to make existing programs better tailored to specific niches.

The range of the market — the difference between high and low ends -- continually widens. To keep from losing ground in the features battlefield, almost every program has issued major revisions in the last year. PageMaker and Ventura Publisher pushed the high end considerably higher with their upgrades. What was mid-range a year ago is now only at the top of the low end. The low end, once solely for users of dot-matrix printers, by necessity now offers strong support for laser and inkjet output.

The surge in desktop publishing has also created a new class of word processors that handle layout. The big names in office/professional word processing on the PC — like Microsoft Word and WordPerfect — have added layout features and preview modes to show you your work before printing. Even some executive word processors, such as Samna's Ami, toggle to a desktop publishing mode and display WYSIWYG fonts. Document processing, an area pioneered by Lotus Manuscript, is now coming into its own, thanks to these programs. But all of the word processors lack a fundamental desktop publishing component: professional typography.

Fundamental publishing issues like typography are now being handled decently by many low-end desktop publishing programs. And almost all high-end programs now match most typesetters' capabilities; in some areas, they surpass them. Indeed, the high-end programs are starting to address the needs of printer preparation (where camera-ready pages are turned into the negatives for printing). "Pre-press," as it is called, is the next frontier: Some output devices can already produce negatives, and the capability to handle professional colour output competently seems to be just over the horizon.

You can expect more changes in these markets as users and developers become more sophisticated. But these changes are accompanied by some problems — most notably the ability to misuse publishing programs. They are merely tools, which amateurs can use to impede communication as easily as enhance it. Perhaps the most obvious example is "ransom-note publishing" — the tendency for novice publishers to include too many font styles and sizes in a document. The emphasis on "desktop" has overshadowed the real issue: publishing. These programs will not give you publishing expertise or design sense.

For MS-DOS users, PageMaker and Ventura Publisher are the clear top dogs. They not only lead the market but define what desktop publishing is becoming. As they extend the definition of "high end", their pioneering work continues to filter down to lower end products and to users at large. In this product comparison, we take an in-depth look at PageMaker and Ventura.

PAGEMAKER AND VENTURA: TO EACH HIS OWN

Both PageMaker and Ventura Publisher cover a professional publisher's basic needs. They let you produce professional documents, although there are differences in how well they handle various types of documents. To reduce these differences, both have altered their approaches a bit in their latest releases to match the capabilities of the other. PageMaker 3.0 added style sheets and optional automatic file updating, while Ventura 2.0 simplified on-the-fly text entry and added colour support. But fundamental differences remain.

PageMaker is designed for free spirits: It emphasises free form placement and WYSIWYG graphics manipulation, and the program focuses on freehand layout. People with experience on projects such as advertisements and brochures will feel right at home. PageMaker lets

Pagemaker

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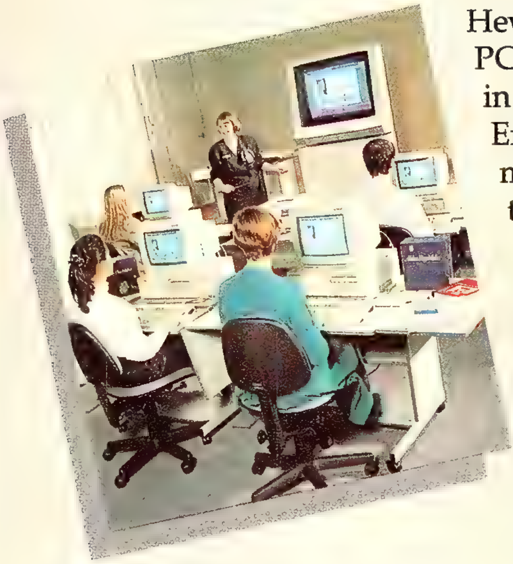

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you begin trying out ideas immediately, but it requires more manual reworking and fine tuning as you finalise your publication.

Ventura, on the other hand, is designed for traditionalists. It has emphasised typographic control and follows the traditional dummy (or "grid") layout method. The program focuses equally on layout and typography, stressing the structured application of both. People with experience in typesetting or laying out periodicals will feel right at home. Ventura requires you to plan your work but offers high-volume production for later projects with similar requirements.

The best program for you will depend heavily on your company's types of publications, work flow, management structure, and user-interface preferences. Some companies with diverse needs and users are even finding it useful to have both programs. Single users find their documents, work habits, and preferences play a big role in deciding which is best.

ALDUS

PAGEMAKER 3.0 FOR THE PC

Desktop publishing originated on MS-DOS PCs with programs such as Studio Software's Front Page. However, they all but died when Aldus released PageMaker on the Apple Macintosh, both legitimising and defining the field. When Aldus ported PageMaker to MS-DOS in the winter of 1987, it revived and legitimised MS-DOS as a desktop publishing environment. Ventura had been released earlier, but it received much less attention. PageMaker also helped to make graphical interfaces on PCs used in business a reality.

Aldus took the next step — supporting flexible, mixed machine hardware environments — by introducing file, feature, and interface compatibility between the Mac and MS-DOS versions of PageMaker. This gave users on both

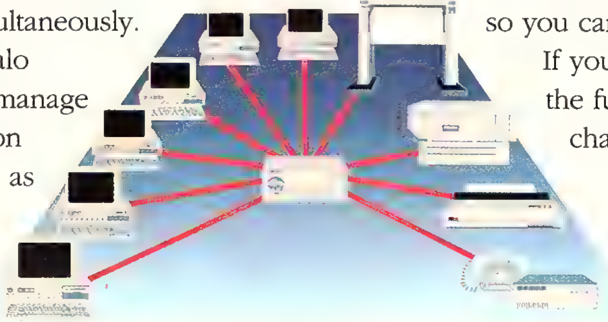
FEATURES
PC Desktop Publishing (Part One)

	Aldus PageMaker Version 3.0	Ventura Publisher Version 2.0
Price	$1795	$1535(1)
Minimum RAM	640K	640K(2)
Hard disk space used	1.3Mb(3)	1.4Mb
LAYOUT		
Style sheets	Yes	Yes
Cut and paste between sheets	No	Yes
Automatic text flow	Yes	Yes
Adds new pages automatically	Yes(4)	Yes(5)
Automatic wraparound	Yes	Yes
Automatic wrap may be turned off	Yes	Yes
Automatic polygonal wrap	Yes	No
Column balancing	No	Yes
Vertical justification	No	Yes(6)
Position by coordinate	No	Yes
Custom page size	Yes	Yes
View facing pages	Yes	Yes(7)
Guidelines	Yes	Yes
Rulers	Yes	Yes
TEXT		
Import formats (excludes ASCII)		
DCA	Yes	Yes
Microsoft Word	Yes	Yes
WordStar	Yes	Yes
WordPerfect	Yes	Yes
Spreadsheet, database import	Yes	Yes(8)
Exports edits	Yes(9)	Yes
Automatic export	No	Yes
Exports to different format	Yes	Yes
Automatic import of updated file	Yes(10)	Yes
Quote conversion	Yes	Yes
Dash conversion	No	Yes
Hyphenation	Yes	Yes
Multilingual	Yes	Yes
Discretionary hyphens	Yes	Yes
Exception dictionary	Yes	Yes
Consecutive-hyphen control	No	Yes
Hyphenation preference control (within word)	No	Yes(6)
Hyphenation zone control (within column)	No	Yes
Contents/index generation	No	Yes
Cross-reference generation	No	Yes(6)
User-defined tab stops, leaders	Yes	Yes
Search and replace	No	No
Spelling checker	No	No

(1) Professional Extension costs an additional $895.
(2) Professional Extension needs an additional 256K to 512K, depending on DOS version and graphics adaptor, to be effective and another 1.2Mb to use the professional hyphenation dictionary.
(3) Requires an additional 1.9Mb for full Windows operating environment, 1MB for run-time version.
(4) If automatic flow is selected.
(5) Adds pages only if text is flowed in default frame.
(6) Professional Extension only.
(7) You may not work across both pages, only view them side by side.
(8) Imports only print files, not native files.
(9) Exports only in ASCII and Microsoft Word formats.
(10) If update-file feature is selected.

Stop the printer stampede with Buffalo

From $567 RRP



Save time and money by sharing any printers, plotters and modems, between your computers. Buffalo buffers let two to eight users easily use expensive equipment simultaneously.

Not only that but Buffalo buffers can automatically manage for you complex settings on sophisticated devices such as laserprinters.

The Buffalo SL will interconnect up to 10 computers and peripherals. Printers, plotters or modems can be up to 150m from your computer, which means you can share equipment even if it isn't immediately next to you.

All without the expense or complexity of a Local Area Network!

Pop-up menus make it easy to choose your printer and you can print to the first available printer in your group. The huge memory (up to 4 MB) of the Buffalo SL lets you download your printing so you can get straight back to work.

If you need more connections in the future you can just daisy-chain additional Buffalos.

If your requirements aren't quite so demanding Interface Technology also offers a range of Keydex buffers from only $383 R.R.P.

For more detailed information and technical specifications on Interface's wide range of buffers, call Interface Technology on (02) 484 8400 or write to the address below.

We'll be more than happy to help you or your dealer decide which Spooler is the right one for you.

Interface Technology

Level 1 265 Pennant Hills Road Thornleigh NSW 2120 Tel: (02) 484 8400 Fax: (02) 484 8425 platforms access to the same power without giving up their favourite operating system styles and applications.

From the beginning, PageMaker focused on layout and graphics. Through several upgrades, it has retained its free form, unstructured approach in which users react to and modify designs as they progress.

But this lack of structure also means that duplicating a design across several pages or columns requires a lot of manual fine tuning — the same problem layout artists face with traditional paper layouts. Because each column is placed and re-positioned with a mouse, it is difficult to ensure that the top and bottom of each column align with the other columns' tops and bottoms. PageMaker's latest version, 3.0, recognised the importance of at least some automation when it added automatic text flow to help ease these manual tasks.

In graphics, PageMaker's highly WYSIWYG approach has been the key to its success: You can see the effects of your actions, such as cropping an image, as you carry them out. This helps greatly in eliminating guesswork.

With Version 3.0, PageMaker began paying more attention to typographic issues that are fundamental to publishing because they determine how easy it is to read text. Graphic artists are increasingly aware that good typography can transform text from a necessary evil to a fundamental design component.

PageMaker still requires trade-offs, though, for text-oriented publications like most newsletters, magazines, and books. For example, you may want large word spacing in body text to help the reader distinguish individual words, but too much space between words in a headline looks wrong. But in PageMaker, you cannot control the spacing of different types of text in the same block separately, so you must find a compromise setting.

PageMaker is thus optimal for any work — advertisements, brochures, posters, or covers — where images speak louder than words. PageMaker is rightfully the graphic artist's program of choice.

PageMaker's layout features include the unique capability to work on two facing pages (a "spread' in publishing lingo) simultaneously, and can even place graphics and text across them. This is extremely helpful in folded publications like brochures. PageMaker lets you define your own page size for odd-sized publications. A feature called Master Pages lets you set basic global layout parameters, such as the number of columns and margins, easing some of the program's manual burden. Rulers and guidelines also help you to perform these tasks more accurately.

Two powerful features give graphic artists more creative control over graphics presentation: polygonal wrap and image control. As anyone who has tried to use a typesetter or a scalpel to wrap text manually around an irregular graphic can tell you, PageMaker's polygonal wrap capability goes beyond what you could achieve with conventional methods, giving desktop artists a unique power. For each graphic, PageMaker also gives you a choice of three wrap methods: around the image like a doughnut around its hole, above and below an image like the bread in a sandwich, or only above an image. PageMaker's text wrapping capabilities are vastly superior to Ventura's.

The control over image output also adds a new dimension to layout: It gives artists a degree of control over the printing of their work. You can now create special effects like making a photograph print as a series of lines rather than the usual series of dots, or you can intentionally use a coarse resolution on an image to create a rough feel.

PageMaker also lets you define colours and produce spot colour overlays. The colour capabilities are adequate if you use a colour printer, but they do not truly support standard colour printing methods like four-colour process and Pantone Matching System (PMS) spot colour. (Full colour support, including PMS colours, is standard in some Macintosh desktop publishing packages such as Quark and Ready Set Go!)

PC WORLD
PRODUCT SUMMARY

Aldus PageMaker for the PC
Version 3.0

Company: InfoMagic, 5 Skyline Pl, Frenchs Forest, NSW 2086. Tel: (02) 975 1044.
List price: $1,795 (includes Bitstream font manager)
Requires: IBM PC AT or compatible; MS DOS 3.1 or later; hard disk; 640K of RAM; Microsoft Windows (run-time version included); CGA, EGA, VGA, or Hercules graphics; mouse; system disks come in 1.2Mb or 720K formats, and 360K disks are available for extra
Pros: Excellent graphical control; free form layout and text entry; runs on and shares files between MS-DOS PCs and Macintoshes
Cons: Typographic and layout control are only moderate; slow execution
Summary: PageMaker is a versatile program for design intensive publications like advertisements and brochures. Its greatest strength is its WYSIWYG, dynamic graphics handling. While best for one-off documents, PageMaker is not as strong with repetitive documents or publications that require frequent revision.

You can import graphics in several bit-map and drawing formats. Cropping and re-sizing the images are WYSIWYG and can be done in real time. A basic drawing package that includes fill patterns, shades of grey, and several types of rounded corners complete the graphics features.

Typographic features cover the basics (equivalent to a low-end photo imaging typesetter) as well as a couple of extras. Basic features

"Is there something we missed?"

ACCEL-500
Sales by Region

Is there anything missing in the ACCEL-500 24-pin dot matrix printer?

Not performance. The ACCEL-500 can zoom through drafts at 480 cps. Print charts and graphs in dazzling colour. And combine letter quality with high resolution colour graphics.

Not versatility. The ACCEL-500 is compatible with ImageWriter® LQ and most popular printers. So it's equally at home on Macintosh® and IBM®-compatible PCs. And there's a paper handling option for every office application.

Not convenience. ACCEL-500's innovative Select-Dial™ makes paper handling a snap. And plug-in Intelli-Cards™ add fonts and printer emulations instantly.

Not reliability. The ACCEL-500 is a 'round the-clock workhorse that takes even the most demanding workload in stride.

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And certainly not value. The ACCEL-500 is priced well below leading printer brands that offer far less capability.

In fact, it has everything. O.K., so it hasn't got a kitchen sink. It can print one.

ACCEL-500™

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ACC916

include text alignment, justification, various typefaces, type sizing and spacing, indentation, hyphenation (including exception dictionaries), user-defined tabs and leaders, and some control over kerning and letter spacing. One extra feature is control over how close to the column edge hyphens may be inserted during hyphenation; this controls how unjustified text will appear. Another extra is the automatic conversion of typewriter-style quotes to typographic-style quotes.

Compared with Ventura, however, PageMaker lacks fine typographic controls such as the capability to define different tracking settings for separate paragraphs in a document or the capability to specify the maximum number of consecutive hyphens.

PageMaker 3.0's expanded typographic repertoire includes style sheets, which allow the user to assign a set of typographic attributes such as size and typeface. All paragraphs tagged with the set's name can be automatically changed at any time. You can embed the tags in your word processor's text files — a faster method than by assigning them to paragraphs in PageMaker.

As if to ensure editorial changes are made before layout, PageMaker's word processing features are basic: copy, delete, and insert. Unlike Ventura, text changes made in PageMaker will not alter the original word processing files. Imported text is discrete from the original file. You can import several text formats plus ASCII; if you use Microsoft Word, it will also import your style sheets. It also imports Lotus 1-2-3 and dBase files. You can set it to automatically import the latest version of your text (in case your source file changes periodically, like a price sheet). PageMaker can export text in ASCII and Word formats.

PERFORMANCE

For graphic artists, PageMaker's layout features are both complete and well executed,

FEATURES
PC Desktop Publishing (Part Two)

	Aldus PageMaker Version 3.0	Ventura Publisher Version 2.0
TYPOGRAPHY		
Kerning	Yes	Yes
Letter spacing (tracking), word spacing	Yes	Yes
Local override	No	Yes
Define for each paragraph style	No	Yes
Bullets, symbols	Yes	Yes
Automatic drop caps	No	Yes
Automatically indented bullets	No	Yes
Attribute override (superscript, subscript, small caps, underline, strikethrough, and overline size and position)	No	Yes
Fraction builder	No	Yes
Equation generator	No	Yes(1)
Table formatter	No	Yes(1)
GRAPHICS		
Bit-map import formats		
GEM .IMG	No	Yes
Mac Paint	Yes	Yes
Paintbrush .PCX	Yes	Yes
TIFF	Yes	Yes
Bit-map editor	No	No
Drawing import formats		
Encapsulated Postscript (EPS)	Yes	Yes
GEM	No	Yes
PICT (Version 1)	Yes	Yes
Windows metafile	Yes	Yes
Drawing tools	Yes	Yes
Draw rules	Yes	Yes
Associate rules with paragraphs	No	Yes
User-defined rule size	No	Yes
Hide-graphics option	No	Yes
Scaling/resizing	Yes	Yes
Cropping	Yes	Yes(2)
Spot colour	Yes	Yes
Fill patterns	Yes	Yes
Grey-scale screens	Yes	Yes
OUTPUT		
HP Laserjet	Yes	Yes
PostScript printers	Yes	Yes
Can use downloadable fonts	Yes	Yes(3)
Image control (alter line screens, angles)	Yes	No(4)
OTHER		
On-line help	Yes	Yes(5)
Undo	Yes	No

(1) Professional Extension only.
(2) Crop is mathematical, not WYSIWYG.
(3) Requires only font width-table information, not purchase of complete screen and printer font as long as output device contains fonts to be printed. Default width table contains 42 typefaces.
(4) Image control available only for TIFF images.
(5) Help is context-sensitive.

The New 804 Series

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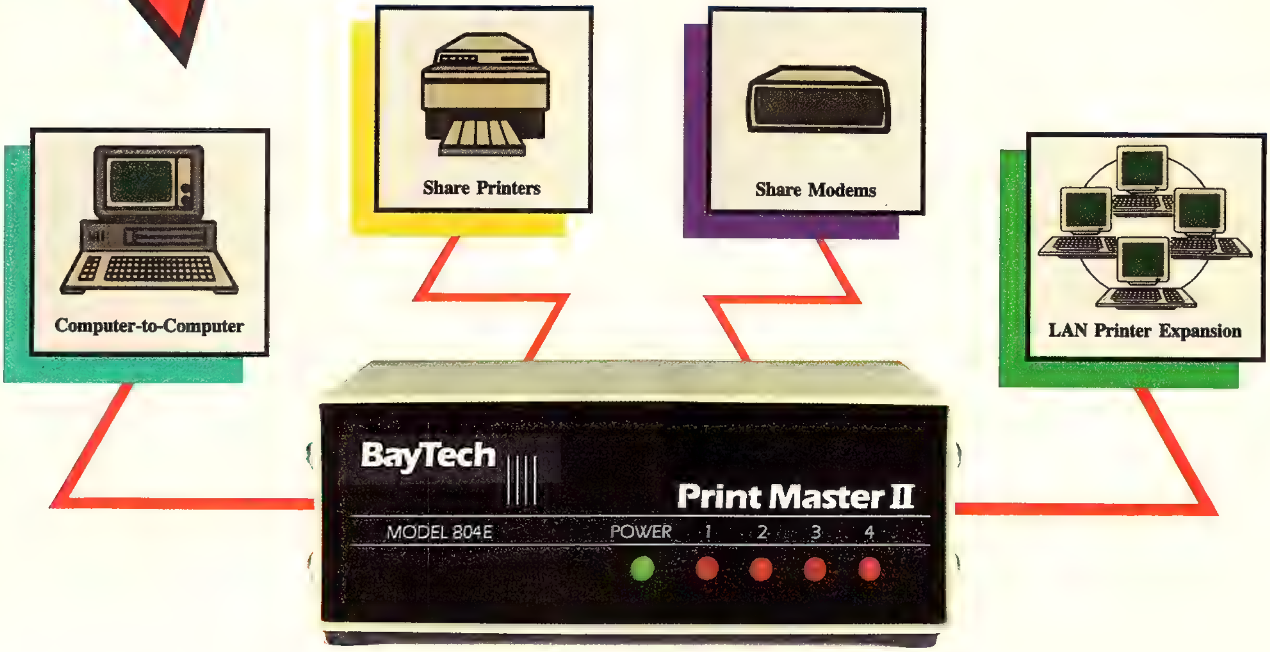

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- **plotter sharing**
- **buffering of data**
- **LAN printer expansion**

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LAN APPLICATIONS

The 804 Series is ideally suited for expanding the printing capabilities of a LAN system. By acting as a printer server, it can off-load network traffic and provide port expansion and extra buffering.

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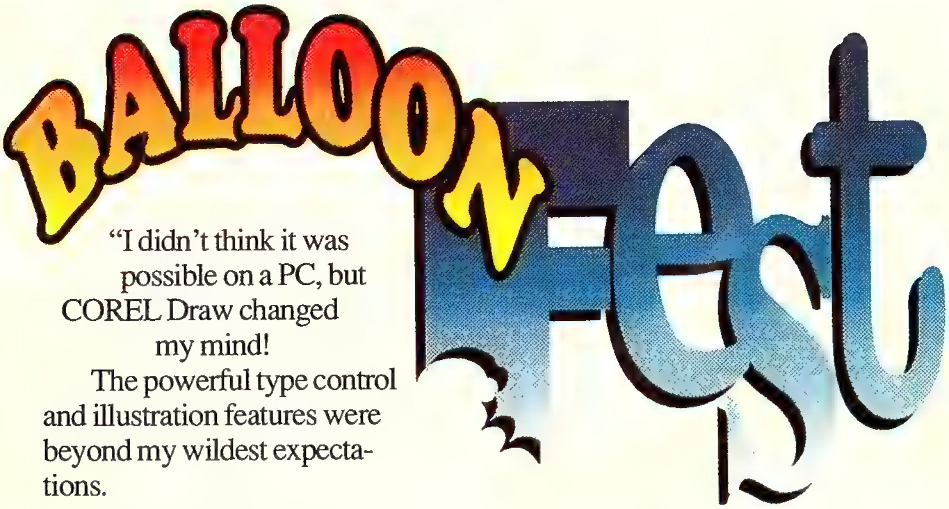
Look what I did



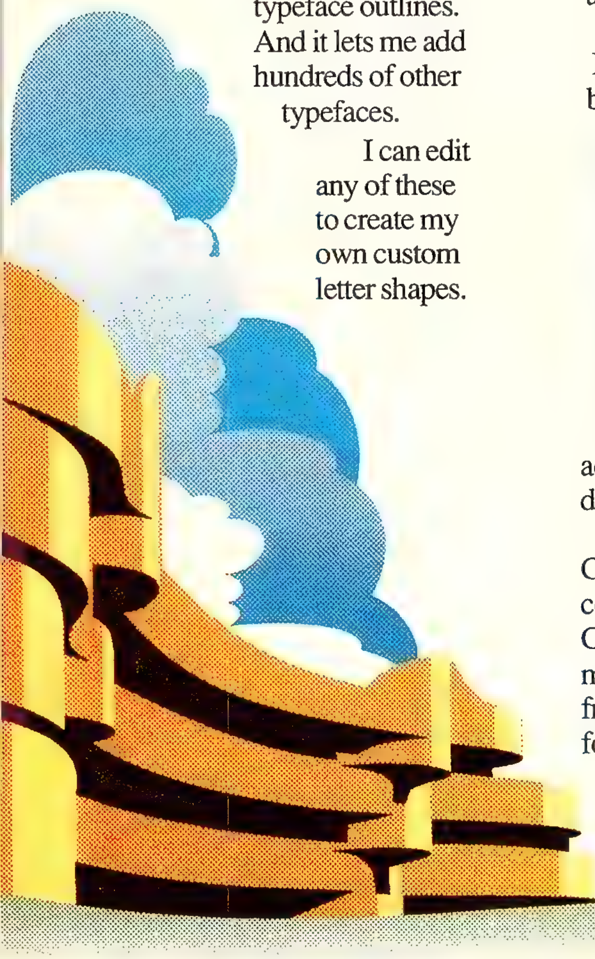
"I didn't think it was possible on a PC, but COREL Draw changed my mind!

The powerful type control and illustration features were beyond my wildest expectations.

I can adjust character spacing on the screen. Fit text to a curve. Stretch. Skew. Rotate. Or transform individual letters, words or sentences.

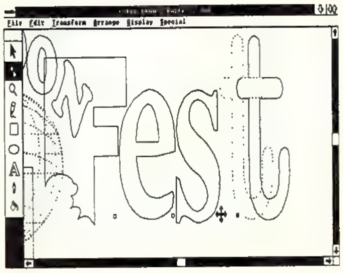
COREL Draw includes over 70 professional typeface outlines. And it lets me add hundreds of other typefaces.

I can edit any of these to create my own custom letter shapes.



COREL Draw creates smooth bezier curves. It adjusts the finer points of my freehand drawings, lets me make subtle changes and refine each element. The curve editing features are awesome!

With the Autotrace feature I can convert bitmaps to vector-based artwork.



The unique calligraphic pen adds a human touch to my line drawings.

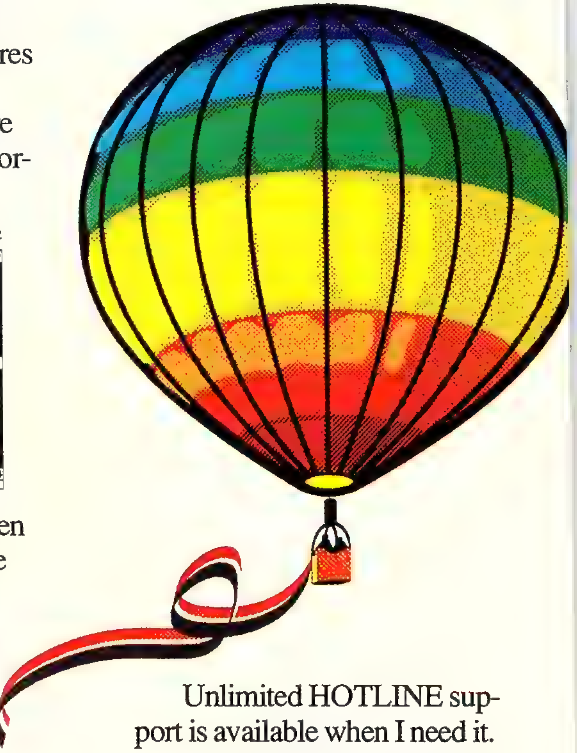
And talk about color! COREL Draw lets me choose colors from the Pantone™ Color Matching System or mix my own. I can even blend from one color to another using fountain fills.

Color separations and color-matched printing is just a mouse click away.

HP LaserJet®, PaintJet® and other Windows' printers perform like PostScript® printers with COREL Draw!

Extensive export features let me include my graphics in PageMaker® and Ventura Publisher™. Even the IBM® mainframe understands my files.

A comprehensive manual, video tutorial, type gauge, and clipart library are included in this feature-packed program.



Unlimited HOTLINE support is available when I need it.

I found COREL Draw incredibly fast, uncompromising in quality and very easy to use. The rave reviews were right on!

Let's see what YOU can do with COREL Draw!"

with CORELDRAW!

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REPORT CARD
PC Desktop Publishing

Price	**Aldus PageMaker** $1,795	**Xerox Ventura** $1,535 $895 for Prof Ext
Performance		
Layout	Very Good	Excellent
Word processing	Satisfactory	Very Good
Professional features	Very Good	Excellent
Graphic objects	Very Good	Very Good
Graphic images	Excellent	Very Good
Speed	Satisfactory	Very Good
Output quality	Very Good	Very Good
Documentation	Very Good	Very Good
Ease of learning	Excellent	Good
Ease of use	Very Good	Excellent
Error handling	Very Good	Good
Support policies	Satisfactory	Satisfactory
Value	Very Good	Very Good

PC World reviews only finished, production versions of products, never beta test versions.
Products receive ratings ranging from unacceptable to excellent in various categories.
Excellent — Outstanding in all areas. Very Good — Meets all essential criteria and offers significant advantages. Good — Meets essential criteria and includes some special features. Satisfactory — Meets essential criteria. Poor — Falls short in essential areas. Unacceptable — Fails to meet minimum standards or lacks this feature.

and the program's manual free-form method is right on target. Unlike Ventura, PageMaker will not let you position and size text and frame elements by coordinate. Overall, we rate PageMaker's layout features Very Good.

The word processing features accomplish what needs to be done, although the incapability to insert special characters like dashes or to embed typographic settings like point size and typeface in your word processor file means you must edit your copy for such attributes in PageMaker — a slow process. We rate word processing Satisfactory.

In comparison with Ventura, professional features remain PageMaker's weakness, especially in regard to typography. Despite improvements such as style sheets, the lack of localised control and time saving automation features forces compromises. An example of this is saving changes back to your source file or frame anchoring (a feature supported by Ventura). Nevertheless, the availability of features in comparison with other PC desktop publishing programs is plentiful, and we therefore rate professional features Very Good.

PageMaker's handling of graphic objects is another story. The drawing tools and their options meet the most sophisticated needs. You can wrap text around virtually any polygonal shape and adjust it easily; "live' cropping and re-sizing is also easy. All that is missing is the capability to define custom rule line thickness. We rate graphic objects Very Good.

Likewise, PageMaker's handling of graphic images is very strong. The WYSIWYG cropping and re-sizing tools make graphics manipulation child's play. Graphic images are rated Excellent.

In part because it is based on Windows, PageMaker is slow. Running on anything less than a 10MHz 80286 PC is most assuredly frustrating. We recommend at least a 16MHz machine for professional users. Speed is Satisfactory.

Thanks to its support of PostScript and its image control feature, PageMaker's output quality is great. Text and images print clearly and crisply on 300dpi printers; on a typesetter, they are indistinguishable from the typesetting standard. For the most part, objects and text were well formed and in place correctly. While not absolutely perfect, we rate output quality Very Good.

DOCUMENTATION

PageMaker's three reasonably organised manuals and several small guidebooks cover the basics, especially for new users. But a spotty index and a tendency to sprinkle details throughout the documentation can make it hard to use the manuals as a reference. On-line documentation, while not context sensitive, offers good reminders on how the features work

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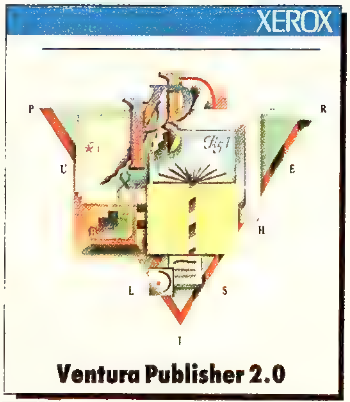

DTP Software

Xerox Ventura Publisher, Version 2.0

Desktop publishing with your PC is now even easier. This program features fast, efficient operation, hundreds of automated functions, and on-line help. Ventura Publisher 2.0 is easily the most versatile desktop publishing package for the PC available today.

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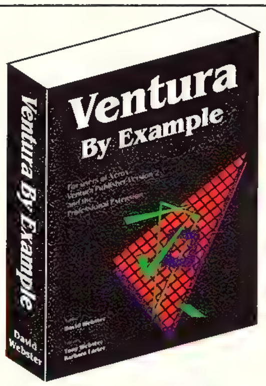

FREE!

Ventura By Example...

All Ventura Publisher packages purchased before September 30th will include a *FREE* copy of *Ventura By Example* — with its many exercises and illustrations, it has helped hundreds of users simplify the learning process, and has been chosen as approved training material by Xerox USA.

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and it is well-written. Error messages contain valuable technical information for support personnel. Overall, we rate documentation Very Good.

EASE OF LEARNING

The combination of good documentation, free-form layout approach, and familiar Windows interface makes PageMaker easy to learn and use. Ease of learning is rated Excellent, aided by the intuitive PageMaker and Windows interface and the proficient start-up guide.

EASE OF USE

The only really tricky area is font handling, since adding downloadable fonts is made difficult by Windows' arcane process (but that is not PageMaker's fault). Also, file compatibility between MS-DOS and Mac PCs suffers when the use of downloadable fonts is not strictly controlled on both systems and when Apple's own internal fonts are used in files destined for an MS-DOS PC. Keyboard shortcuts and the Windows interface generally enhance operations (with the font exception), and we rate ease of use Very Good.

ERROR HANDLING

Error handling in PageMaker includes an Undo command and a save function that automatically saves your document each time you "turn" the page in a document. We rate error handling Very Good.

SUPPORT

PageMaker comes with unlimited telephone support from InfoMagic and re-sellers. We rate support policies Satisfactory.

VALUE

At $1,795, PageMaker is a Very Good value. As a bonus, it includes Bitstream's font management software. PageMaker offers a solid range of features for graphic artists in a very competent implementation; professional users will include the added cost of a very high-speed PC in order to operate comfortably.

XEROX

VENTURA PUBLISHER 2

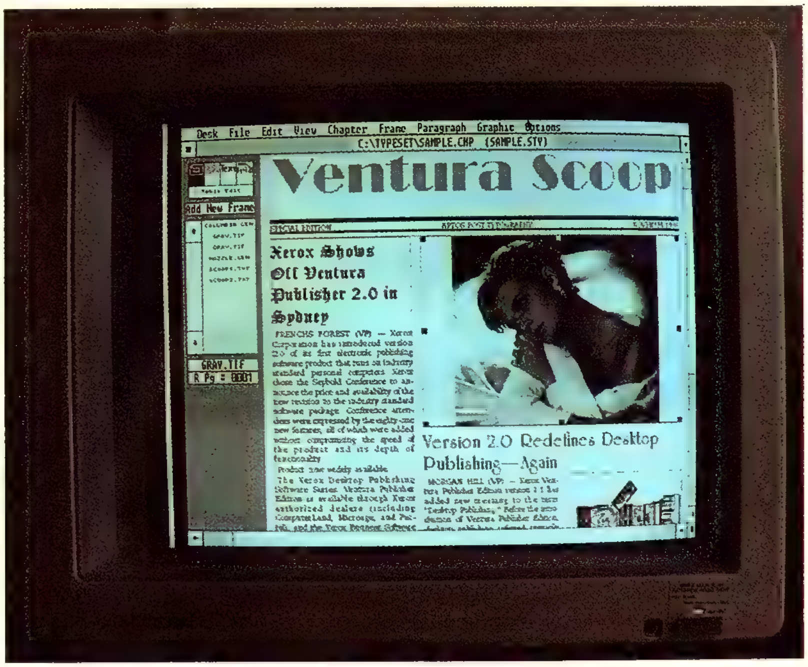
Now the best-selling high-end desktop publishing package for PCs, Xerox Ventura Publisher slowly moved out of the long shadow cast by PageMaker, which for most people was synonymous with desktop publishing.

Ventura began to stake out its reputation with Version 1.1, when it traded several clunky implementations for fine control. A year after Version 1.1's release, Version 2.0 added even more control and sophistication — approaching the capabilities of mainframe publishing packages —but it also made some features work on the fly to appeal to PageMaker users.

Ventura's approach is to use frames that contain text and graphics and to use style sheets with tags that define the typographic features of various paragraph types. Ventura combines these two mechanisms to give you powerful, localised control over dozens of layout and typographic attributes. The combination lets you make changes quickly with little or no manual reworking. Ventura also has local overrides so you can fine tune elements of your document without getting waterlogged in a sea of tags and frame types. Ventura is aimed squarely at those who publish newsletters, magazines, books, and other structured but flexible documents that require sophisticated typographic control and benefit from a structured layout that can be used as a modifiable template.

It is this template approach that differentiated Ventura from the competition and fostered its following. These features are now common underpinnings (although with less-sophisticated execution) in most new PC desktop publishers.

Ventura's graphics, on the other hand, are not as advanced. Although a rich set of features is available, the features tend to be implemented non-graphically,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Xerox Shows Off Ventura Publisher 2.0 in Sydney
Version 2.0 Redefines Desktop Publishing—Again

Ventura 2.0

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PACIFICPAGE™
PostScript® Language Fluency Quiz

1. What applications can be enhanced with PACIFICPAGE's PostScript language compatibility?
   - A. Desktop Publishing
   - B. Word Processing
   - C. Presentation Graphics
   - D. Click Art Graphics
   - [✓ E. All of the Above, and More!]
2. Which font control capabilities do you get with PACIFICPAGE?
   - A. SCALING
   - B. Reverse Type
   - C. BOLD and *ITALIC*
   - [✓ D. All of the Above, and More!]
3. How many Apple® LaserWriter™ II NT equivalent font families come with PACIFICPAGE? 35
4. Check the features that come standard with PACIFICPAGE.
   - ☐ High Resolution Graphics
   - ☐ Screens and Patterns
   - ☐ Smooth Arcs
   - ☐ Smooth Circles
   - ☐ Rotated Type
   - ☑ All of the Above, and More!
5. PACIFICPAGE is compatible with...
   - A. IBM®
   - B. IBM® Compatible
   - [✓ C. All of the Above]
6. Fill in the blank... PacificPage is the easiest to use PostScript language compatible product on the market.

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PhoenixPage

Xerox Ventura Publisher
XEROX

Xerox Ventura Publisher 2.0 combines graphics with text from a number of graphics, spreadsheet and word processing packages

making it difficult to see the effects of your actions as you are doing them. You have to enter coordinates manually in order to re-size or crop images, and text wrapping is limited to rectangular objects. Wrapping polygonal shapes is an awkward process at best, involving creation of a series of overlapping frames.

Ventura's sophisticated feature set and its well implemented interface make it a powerful program for a wide range of professional users, but these highly capable features take a toll: The program realistically requires more memory than many users have. Ventura will run, however, on slower hardware than PageMaker; while you can run Ventura on an XT (although slowly), PageMaker will require a 286 at a minimum. This is largely due to the Windows overhead compared to GEM.

On the other hand, the high-end, high-control orientation is exactly what professional publishers need. It is ideal for organisations that produce large and continually revised documents. The Professional Extension add-on program with four very high-end features, such as table generation and formula support, furthers this orientation.

Ventura's layout features include the unique ability to anchor frames to points in your text. This way you can be sure that as your layout changes, a table, figure, or illustration will stay with the text that refers to it. A column-balancing option ensures that all columns in a frame are roughly the same length. You can associate rules, boxes, and grey screens to frames; as you move or re-size a frame, these graphics automatically change accordingly.

Another powerful feature is the capability to position and size frames by entering their coordinates. This means that you can ensure perfect alignment throughout a document or set of documents. And you can always position frames by the less exact but easier method of using the mouse — a common approach when beginning a layout — and fine tune the coordinates later. Rulers and guidelines further aid exact placement.

Ventura imports a variety of bit-map and drawing formats, which you can crop and re-size. It provides image control (like image density), but only for TIFF files. The program has a basic drawing package as well as sophisticated functions to associate rules and screens with frames and paragraph tags. You can define rules of any thickness and with three ending types: squared-off, rounded, or arrowheads.

You can also define colours and shades of grey and produce spot colour overlays. But the colour capabilities, while adequate if you use a colour printer, do not truly support traditional colour printing methods like four-colour process and PMS spot colour.

Ventura's typographic controls equal the capabilities of top-of-the-line digital typesetters. For example, there are two fraction types (one using the slash and the other the en dash) that let you easily create true fractions. It also has some typographic features (like automatically positioned drop caps and overlining) that a high-end typesetter lacks.

Other typographic features include text alignment (horizontal and vertical), rotation (in 90-degree increments), justification, typeface, type size (in half-point increments) and spacing, indentation, hyphenation (including exception dictionaries, choice of language, and selectable maximum consecutive hyphens), user-defined tabs and leaders, kerning, word and letter spacing, and column and page break points. There is also control over subscript, superscript, small cap, underscore, strike-through, and overline size and positioning. You can set Ventura to highlight text that does not meet your letter spacing (tracking) parameters. You can also manually tighten or loosen tracking for any selected text. The Professional Extension includes a powerful equation formatter and table generator.

Ventura's word processing features are basic: copy, delete, and insert. But it offers document processing features like contents and index generation. The Professional Extension adds

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sophisticated cross-referencing (for example, in the page numbering reference "See Page 29 for more information", the number would be updated automatically if the referenced page number changed).

You can import text in several word processor formats plus ASCII. A nice feature is the capability to export text in any of these formats, no matter what the original format. You can also import print files from Lotus 1-2-3 and dBase but not native format files. During text import, Ventura can automatically translate typewriter quotes to typographic quotes as well as change two hyphens to a dash. Each time you load a document, Ventura loads the latest version of the text and graphics files. Unlike PageMaker, it also automatically saves any text changes made in Ventura to the original file in the original format. This way, if you want to maintain your original word processing file, you can still make changes in the desktop publishing package and know that the original is being updated.

> *The capability to associate rules and screens with frames and paragraphs powerfully merges typography and layout.*

You can embed codes for all typesetting features in your word processor documents — mirroring the coding approach used in traditional typesetting — so you can do common type coding in your word processor more quickly than in Ventura. Like textual changes, typographic features implemented in Ventura are automatically saved as codes to the original file. Some of these codes also handle layout functions, like anchoring graphics to a spot in the text or referencing the current page or chapter number.

PERFORMANCE

Because of Ventura's structured, frame-based approach, layout is flexible — once you understand the process. The way Ventura links text across frames makes it easy to jump text over several pages. And because you can load all your text files at once and place them into or take them out of frames at any time, it is easy to try out different layout configurations. While this structured but flexible approach works for any document, it is best suited for periodicals like magazines. Any document using a layout grid, where much of the content changes but the basic layout remains constant, is easily controlled by Ventura.

PageMaker, in contrast, is designed more for one-off documents. Ventura requires more planning, but once a document is set up, it can be used repeatedly with different content. It requires less planning to set up PageMaker documents, but once they are established, they are much more difficult to change or re-use. We rate Ventura's superior layout capabilities Excellent.

Ventura's basic word processing capabilities are enhanced by the capability to embed codes in word processor files and by the automatic export of changes to these files. This allows you to distribute the workload to non-graphical PCs and keeps copy-editing tasks like defining subheads and intros with the editor, not the layout artist. We rate word processing capabilities Very Good.

No program comes close to Ventura for professional typography. There are only a few typesetting features that Ventura cannot do, like automatic reverse video and slanted, stretched, and condensed characters. But one basic typographic area has remained uneven: hyphenation. Despite many high-end hyphenation features, Ventura's hyphenation algorithm mis-hyphenates many common words. With the Professional Extension, Xerox offers a solution — the typesetter-based Edco hyphenation system — but that requires 1Mb of EMS memory. A better fix would have been an expanded exception dictionary to contain the 100 or so common words that Ventura mis-hyphenates. Most users will find it less expensive to add these words themselves (plus any uncommon words specific to their fields) rather than buy the EMS memory needed to use the Edco dictionary.

The Professional Extension includes a powerful vertical justification feature to align the tops and bottoms of columns. This fundamental magazine layout feature is absent in PageMaker. However, Ventura tends to over-space columns, resulting in airy text. The work to minimise this airiness usually takes more than to align the columns manually in the first place.

The Professional Extension also provides table and formula generation (PageMaker does not deal with these "typographic niche" areas adequately — tables are difficult to generate and complex formulas are nearly impossible). The available features greatly outweigh any minor complaints, and Ventura's professional features easily rate an Excellent score.

Ventura augmented its basic drawing features with user-defined line thickness and choice of ending type. The capability to associate rules and screens with frames and paragraphs powerfully merges typography and layout. We rate

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handling of graphics objects Very Good.

The program handles many graphics formats and automatically wraps text in rectangular form around graphics and other text frames. You can also hide images to speed up screen re-display. However, you must crop and size images by entering values since no visual cropping or sizing tool exists. As mentioned, this is a weakness compared to PageMaker. The capabilities are still strong enough, however, to rate Very Good in graphics images.

Despite all its features, Ventura is surprisingly fast, thanks to the optimised version of the GEM interface. However, without EMS memory, the program slows down for documents that take more than a few pages. It is possible to run Ventura on lower-end machines than PageMaker needs, although if you are a professional user you will want to use at least a 286-based AT. In the tests we performed, Ventura was consistently very fast, and we rate speed Very Good.

Ventura's precise typographic control results in fine output quality, especially on PostScript printers. Graphics also print crisply. One Lotus .PIC file was misinterpreted slightly, which caused a line surrounding a pie chart to be deleted.

Generally, when you output to a typesetter, the quality meets professional standards. The output was as good as that produced by PageMaker, and output quality earns a Very Good score.

DOCUMENTATION

Ventura's documentation is very well designed. The one manual and several small guidebooks cover a wide range of material, but they do so in depth. Well-indexed and well-organised, the manual is excellent as a learning guide and reference book. The on-line help is context sensitive but spotty in its coverage. Some screens are excellent but others are merely obvious and uninformative. Overall, we rate documentation Very Good.

EASE OF LEARNING

Ventura is both difficult and easy to learn -- difficult because it has so many features, easy because they are well arranged. You can (and should) learn this program in incremental stages, starting with the basics and then moving on to more advanced levels. We rate ease of learning Good.

EASE OF USE

The well-arranged, intuitive interface and the capability to define user preferences (such as measurement units in almost every dialogue box) make the program easy to use. Even better, these preferences are saved for subsequent sessions. Ventura earns an Excellent score in ease of use.

ERROR HANDLING

Ventura handles errors well, giving you meaningful error messages. It will warn you before it runs out of memory, and it checks to make sure you have saved your work before quitting. You can also configure Ventura to back up the previous version automatically when you save. But because it lacks an undo command, we can rate error handling no better than Good.

SUPPORT

Ventura is distributed through MegaVision to dealers who offer after sales support. We rate support policies Satisfactory.

VALUE

At $1,535, Ventura is a Very Good value. As a bonus, it includes Bitstream's font management software. Its wide range of sophisticated features will handle almost every professional need. While the basic Ventura package is complete to a degree, for accurate hyphenation and more advanced features such as table generation, formulas, and vertical justification, you will have to spend extra on the Professional Extension. Also, running Ventura without EMS memory or anything less than 640K of RAM will be very slow depending on document length. If you have documents that need to be re-used, Ventura is more capable than PageMaker. Where Ventura falls short is in design- or graphics-intensive publications. While you can produce these documents, they will require a lot more effort.

PC WORLD
PRODUCT SUMMARY

Xerox Ventura Publisher
Version 2.0

Company: MegaVision, Unit 1, 10-12 Rodborough Rd, Frenchs Forest, NSW 2060. Tel: (02) 975 1877. Rank Xerox, 970-980 Pacific Hwy, Pymble, NSW 2073. Tel: (02) 449 0449.

List price: $1,535 (includes Bitstream font manager); Professional Extension costs an additional $895.

Requires: IBM PC or compatible; MS-DOS 2.1 or later; hard disk; 640K of RAM; CGA, EGA, VGA, or Hercules graphics; mouse; GEM operating environment (run-time version included); EMS memory highly recommended (512K without Professional Extension's hyphenation dictionary, 1Mb with it).

Pros: Handles broad range of documents well; fast; flexible layout and typographic control; template orientation aids occasional users; automatically saves edits to disk.

Cons: Requires EMS for virtual disk caching to process files quickly, otherwise can be very slow; complex.

Summary: Ventura is a powerful program that meets the needs of professional publishers and business communicators. Its greatest strength is its flexible but structured control over layout and typography. It is not as good with graphics-oriented documents, but it handles repetitive documents like a champ.

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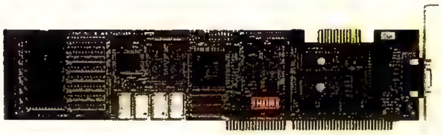

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DTP DUEL

By Galen Gruman

Much ado about colour

Aldus caused a splash when it introduced spot colour overlays to its PageMaker 3.0 a year ago. And when Xerox unveiled Ventura Publisher 2.0, it had spot colour also. (Spot colour lets you add one or more colours individually to a document, but the colours cannot be mixed or combined.) NBI promises that a future version of its Legend program, which can print colour but not output spot colour overlays, will also support spot colour.

But can you effectively achieve colour printing with these programs? If you intend to do all your printing on a thermal colour printer or some other device designed for single page printing, the answer is yes. But if you intend to have a commercial printer print your documents, you will find there is less than meets the eye to the desktop publishers' claims regarding colour: PageMaker and Ventura use one method to create the colour but another to implement it, which limits what you can do.

HOW COLOUR PRINTING WORKS

Printers have two ways to add colour to documents: four colour and spot colour printing. In four colour, images are separated photographically into four negatives, one each for yellow, magenta, cyan, and black. The dots are slightly rotated for each colour so they do not overprint dot for dot. This does two things: It helps fill in the image to make it look more like a continuous one, and it makes sure that the last colour printed does not hide the one printed before it. If you hold a magnifying glass to a newspaper or magazine with four colour images, you will see the dots that make up the image. (It is easier to see this in newspapers, because of their coarse resolution.)

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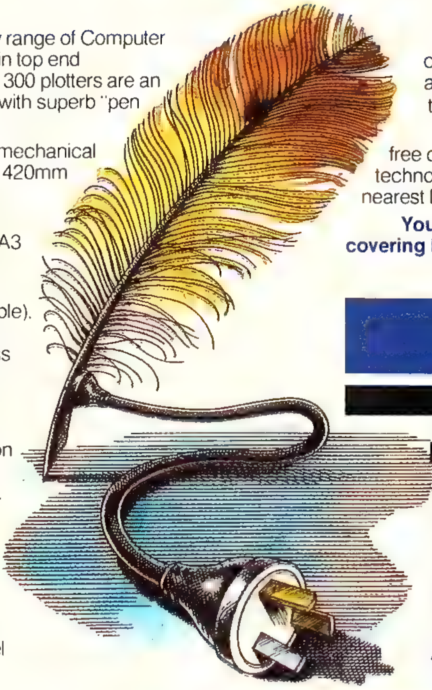

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through four ink applicators, one for each colour (each of these is called a "run"). Each run prints the negative for that colour. When the four basic colours overprint, almost any shade may be produced. For example, magenta and yellow combine to make red. (Shades that cannot be created this way include metallic colours like silver and neon colours like electric blue.) The basic colours — yellow, magenta (a fuchsia-like colour), cyan (a sky-blue-like colour), and black — are called "process colours".

Four colour is efficient and relatively cheap when you have many colours to print, since you use only four runs no matter how many colours you need. It is also the only practical way to reproduce colour photographs, since there are potentially thousands of colours in a photograph. However, four colour is not cost effective if you print fewer than four colours. In this case, printers use spot colour.

In spot colour, instead of overprinting the four basic inks to simulate a colour like mauve or orange, the printer simply uses a pre-mixed ink for the colour you want. Most use colours specified through the Pantone Matching System (PMS), which helps ensure that no matter who prints the colour, it will be the colour you intended. Not only does this save money by reducing the ink and press run costs, but it also removes the need to create the four-colour separated negatives required for four colour printing. PMS ink costs more than the traditional four colour inks, but the cost of printing one PMS colour is much less than that of printing four colours.

The use of spot colour is often called two colour printing because the assumption is that you are printing black for your type as well as the spot colour. But you are not limited to one spot colour to qualify as spot colour printing. For example, you could print two spot colours for a logo in addition to black for your type. If you print three (or more) PMS colours on a page, you might as well use four colour printing, since the three PMS inks plus black will likely cost more than building the desired colours with the cheaper process colour inks.

Sometimes you must combine four colour and spot colour: For example, you might use four colour printing for a photograph or illustration, then add a spot colour for a metallic ink such as silver, for a neon such as electric blue, or for a varnish. The printer would have five negatives and make five runs: one each for the separated four colour image and one for the spot colour. You could have even more spot colours, depending on design requirements, your budget, and the sophistication of your printer's press — the process is the same.

WHAT DESKTOP PUBLISHERS DO

PageMaker and Ventura both let you create any shade of colour you want by combining different percentages of colours. Both give you a choice of three models (hue/saturation/intensity, cyan/yellow/magenta, and red/green/blue), but whichever you choose to create your colour, your printer will use four colour or spot colour to print it. While PageMaker and Ventura have you use what is essentially a four colour process — combining cyan, blue, magenta, and black — to build your colours, they cannot output the four separate positives or negatives a printer needs to recreate your colour. Instead, they output one sheet of whatever medium your printer can produce (film, paper, negatives, or whatever) for each individual colour — in other words, spot colour overlays — instead of the four sheets in the appropriate percentages of each component colour.

You can use these spot colour overlays, but the programs do not tell you which PMS colour the printer must use to match the colour you specified on-line. You have a sheet that matches a colour you created but no way to tell the printer what that colour is.

There are conversion tables from the cyan/yellow/magenta model to PMS, but they work only moderately well and often vary from printer to printer, usually based on the presses they use. Neither PageMaker nor Ventura supplies such a table with its documentation, and neither lets you specify your colours by entering PMS values in the first place.

To be useful for documents published on a printing press, any desktop publishing program that offers colour printing must be able to output colour separations or to specify the PMS value for each spot colour. Macintosh programs like Quark Xpress and ReadySetGo! now let you import colour separations made by some high-end art programs and let you enter PMS values so you can try out colours on-screen; you can expect the MS-DOS programs to do so eventually, too.

But even if that day arrives, be warned: The colour you see on-screen will most likely not match the printed colour because colour produced by light emission from a monitor, no matter what its resolution, is fundamentally different from that produced by light reflection (such as light bouncing off ink on a paper or off the pigment in an apple's skin). Another factor is the hardware and design variations from monitor to monitor. The ultimate answer will be affordable colour printers for PCs that can produce publication quality colour; today's thermal colour printers fall short.

By *Veronica Kotarski*

How to get the most from Ventura

Ventura Publisher is one of the most popular desktop packages around. In this *PC Publish* we have the first of a series of tips and hints for Ventura users.

In order to assist users of Ventura Publisher, we have information this issue on installation procedures. In future instalments we will take a look at memory enhancements, changing batch files, and various ways users can configure their systems to get the best performance from Ventura.

POST INSTALLATION

To assure best performance, use the ASCII text function of your word processor to modify the file in your computer called CONFIG.SYS to contain the lines:

```
BUFFERS =20
FILES=20
```

Any number greater than 20 also works but reduces the amount of memory available for Xerox Ventura Publisher. Failure to add the BUFFERS statement to your CONFIG.SYS file and specify at least BUFFERS=20 results in slower performance. Failure to add the FILES statement and specify at least FILES=20 will cause the Multi-Chapter operations to malfunction and reduce the number of bit images which may be printed on certain printers.

DISPLAYS

VGA grey level display. If you own a VGA display which is capable of producing levels of grey, select the VGA display option during installation which provides grey level support. Choice of this option will let you see shades of grey in TIFF images and will improve screen re-draw performance.

VGA 16-colour displays. If you choose one of the multi-function cards shown on the second page of the VPPREP display, you must use an analogue monitor. Also, you must connect this monitor with a 15-pin to nine-pin cable. The 15-pin end connects to the board; the nine-pin end connects to the display. If you use the 800 x 600 mode available with some of these cards, you must use an analogue multi-sync type monitor.

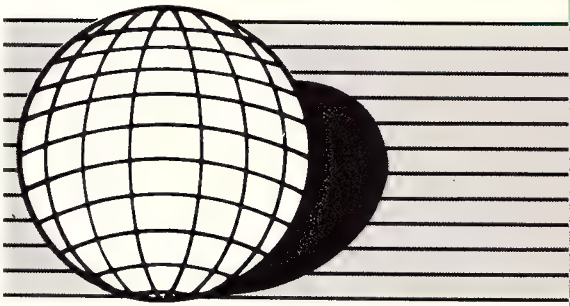
EGA colour display. If you have an EGA display which is capable of displaying 16 colours, you can choose the colour EGA option, even if you do not have a colour printer. While the menus still display in black and white, you can set the colour of any paragraph, selected text, ruling lines, or background pattern and the result will display on the screen.

MOUSE

If you are installing for a Microsoft Bus Mouse, Xerox 6065 or AT&T 6300, type the letter C. If your bus mouse does not function, consult the mouse documentation for information on proper configuration of the jumpers on the mouse plug-in board. Other bus mice not listed, and serial mice that require a MOUSE.COM file (such as most models of the Logitech mouse) should also be installed as option C.

PRINTERS

Xerox 4045. The Xerox 4045 must have at least 450K RAM installed in order to use the 150dpi driver, and at least 1Mb RAM in order to use the 300dpi driver. The status sheet which prints whenever you turn on the printer tells you the amount of RAM in your printer, and shows the current configuration switch settings. Check these switch settings with those shown in Appendix F. If you have less than 1Mb in your 4045, install the 150dpi printer driver. If you have more than 1Mb, install the 300dpi driver.



NEC P-series. These 24-pin printers should be installed by choosing the Epson LQ selection.

Apple LaserWriter. Note that the Apple LaserWriter, LaserWriter Plus, LaserWriter NT, NEC SilentWriter LC-890, and other PostScript printers are installed by typing E. Consult Appendix F for important cabling and setup information for PostScript printers.

IBM 4216. The IBM 4216 is also a PostScript printer, but one which connects to your computer through a special board. When you install this printer, select LPT1: as the port to which the printer connects. When you run Xerox Ventura Publisher, select the Set Printer Info option in the Options menu, then change from LPT1: to Direct.

HP LaserJet. The HP LaserJet (selection B) is different from the HP LaserJet Plus/LaserJet series II (selections C and D). If you own an HP LaserJet, you need to purchase either the 92286F font cartridge or the LaserJet Plus upgrade kit from Hewlett-Packard. The 92286F font cartridge is the only HP font cartridge that works with Xerox Ventura Publisher.

In the next instalment, we will take a look at how the VP.BAT file can be edited to modify how Ventura Publisher is loaded into memory.

•Veronica Kotarski is Ventura product manager at Rank Xerox in Sydney. These tips are based on questions collected from Ventura Publisher users since release 2.0 late last year.

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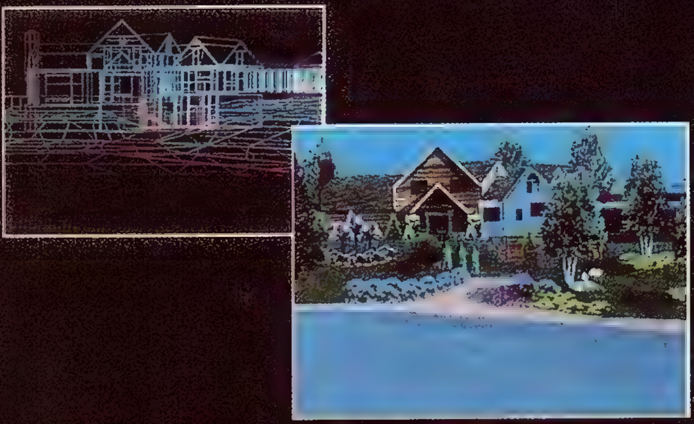

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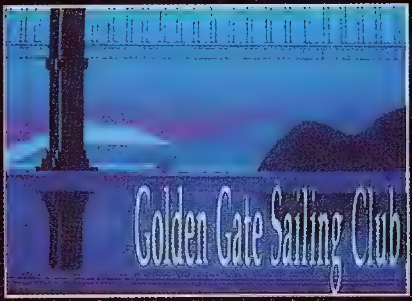
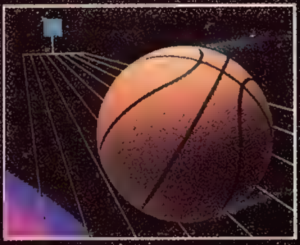
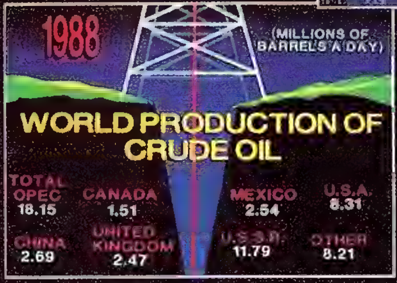
- SIMULATED TEXTURE WRAPPING

GRAPHIC DESIGN AND BUSINESS SALES PRESENTATIONS



i.m.a.g.e. Software for Graphic Arts and Sales Presentation is specifically designed to put the power of unlimited graphic capability in the user's hands.





The program is object oriented which allows the designer to create any motif and still control any given object at any stage of the design. Develop slides and viewgraphs using predesigned background templates and high quality Vector fonts. Create running playback presentations for retail sales environment using tools designed by and for graphic artists.

- ANIMATED SPECIAL EFFECTS FOR SALES PRESENTATION
- PACKAGE DESIGN—AD LAYOUTS—AGENCY PRESENTATIONS
- HIGH QUALITY VECTOR FONTS
- TEXTURE WRAPPING OF 3D IMAGES
- LIMITLESS GRAPHIC DESIGN
- PROFESSIONAL SALES PRESENTATIONS PRODUCED IN A FRACTION OF THE TIME

BEAUTY ENHANCEMENT

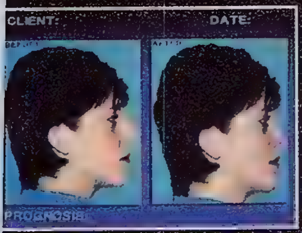
HAIR STYLING, HAIR COLORING, HAIR REPLACEMENT, EYE WEAR AND COSMETIC APPLICATION

i.m.a.g.e. Software for the Beauty Industry visually communicates changes in Hair Styles, Hair Colors, Highlighting and Cosmetic applications.

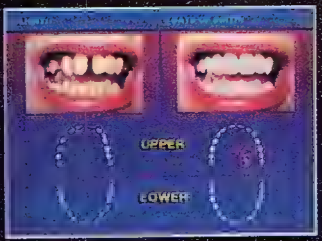
A database of internationally designed hair styles is available. Jewelry, Beauty Accessories, Hair Ornaments, and Eye Wear are easily added.

- SHOW HAIR STYLES, HAIR COLORS AND COSMETIC APPLICATION
- CUT OR ADD HAIR IN ANY TEXTURE OR COLOR
- PREVIEW EYE WEAR AND COLOR CONTACT LENSES

COSMETIC SURGERY AND DENTAL MODIFICATION



i.m.a.g.e. Software for Cosmetic and Dental modification is specifically designed to visually demonstrate facial and body redesign.



For Dental improvement, upper and lower positioning and coloration of teeth can be easily effected, as well as dental bonding, bleaching and orthodontistry.

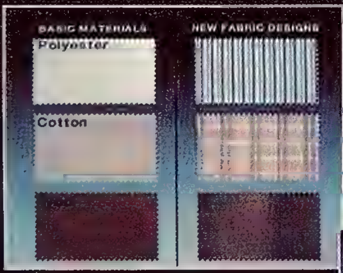
- FACIAL SURGERY & BODY RESTRUCTURING
- COSMETIC DENTISTRY SIMULATION
- PREVIEW DENTAL TREATMENTS
- GRID POSITIONING REFERENCE

INTERIOR DESIGN

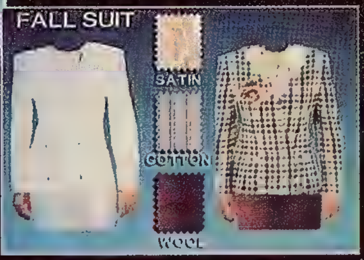
i.m.a.g.e. Software for Interior Design shows customers interiors at any angle. Display wall coverings, floor coverings, ceiling textures and furnishings. Perspective control of interior elements make for perfect room positioning. Automatic priming and painting applications make room painting easy and colors correspond to actual products.

- INTERIOR DESIGN AND RENDERING FROM ANY ANGLE
- PERSPECTIVE CONTROL OF DESIGN OBJECTS
- EASILY CREATE DATABASE OF SURFACE TEXTURES, WINDOWS, WINDOW COVERINGS, WALL COVERINGS AND FLOORING TREATMENTS

CLOTHING AND TEXTILE DESIGN



i.m.a.g.e. Software for clothing and textile design is a remarkable program that makes fabric design and coloration easier than ever.



Design clothing lines and wrap garments in finished fabrics. Easily create your own database of fabrics, patterns and fashions.

- COMPLETE CLOTHING AND TEXTILE DESIGN
- OBJECT CONTROL AT ANY STAGE OF DESIGN
- FABRIC AND PATTERN DESIGN
- COMMUNICATE FULL COLOR DESIGNS OVERSEAS IN MINUTES
- SEE FINISHED SAMPLES FROM OVERSEAS SUPPLIERS IN SECONDS

New Image Salon Systems Pty. Ltd.
Suite 1, 321 Camberwell Road, Camberwell, Vic. 3124. Telephone: (03) 882 9288 Fax: (03) 882 4288
Dealer enquiries welcomed
i.m.a.g.e. SOFTWARE is a Division of New Image Industries Inc.

Platform to market FrameMaker

High-end desktop publishing applications have special problems that are often beyond the capabilities of Ventura Publisher or PageMaker. Very long documents, such as large books or catalogues that contain text and graphics, or documents that double as information databases (such as spare parts inventories), need a high-end publishing solution. At the moment there are two high-end page layout packages in use: IBM's Interleaf and Frame Technology's FrameMaker.

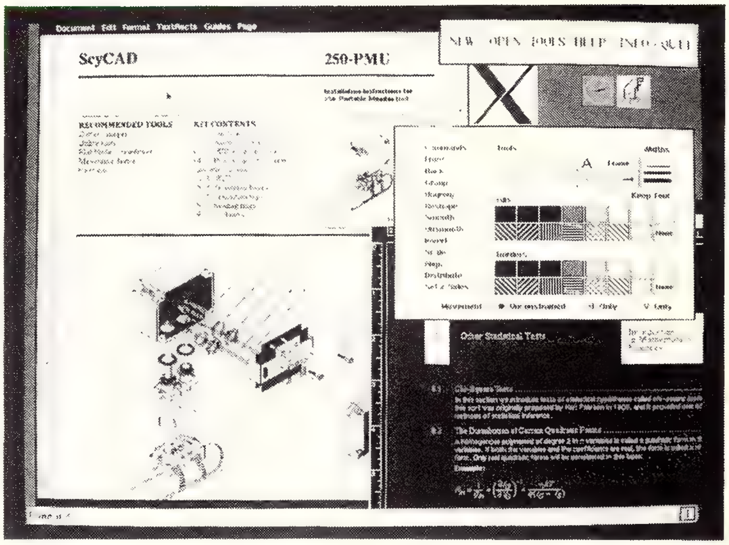
FrameMaker 1.3 is claimed to be the leading professional publishing software for Sun workstations. It has recently been ported to Apollo workstations as well. The Frame Technology Corporation has been marketing FrameMaker in the US, and the product has become successful in just three years. Sales stand at $US20 million a year.

In Australia, Sydney-based Allette Systems has formed a new division, Platform Technologies, to market FrameMaker. Existing Australian customers include General Motors, NEC and academic institutions.

Special features of FrameMaker include a full search/replace function, spelling correction, equation correction, equation calculation, full drawing facilities (including CAD), indexing and listing, live links between source files and Frame files, and abilities to handle imported text and graphics in a variety of formats.

Suitable for large projects such as ship or aircraft manufacture and maintenance, FrameMaker enables several writers to be working on different parts of the project, which can later be combined into one document. Non-writers can also call in for reference.

Version 1.3-X will work on any networked display that supports the Unix X Window system server software. A future release (FrameMaker 2.0) will allow text formatting from .001 to 400 points, spot colour separations, and unlimited document lengths. Platform Technologies: (02) 262 4777.


Document Edit Format TextEffects Guides Page
ScyCAD
250-PMU
RECOMMENDED TOOLS
KIT CONTENTS
NEW OPEN TOOLS HELP INFO QUIT
Other Statistical Tests

FrameMaker on Apollo

Interpreting PostScript

You do not necessarily need access to an expensive PostScript printer to print out your PostScript files.

Compatible Interpreter
The Missing Link in Desktop Publishing

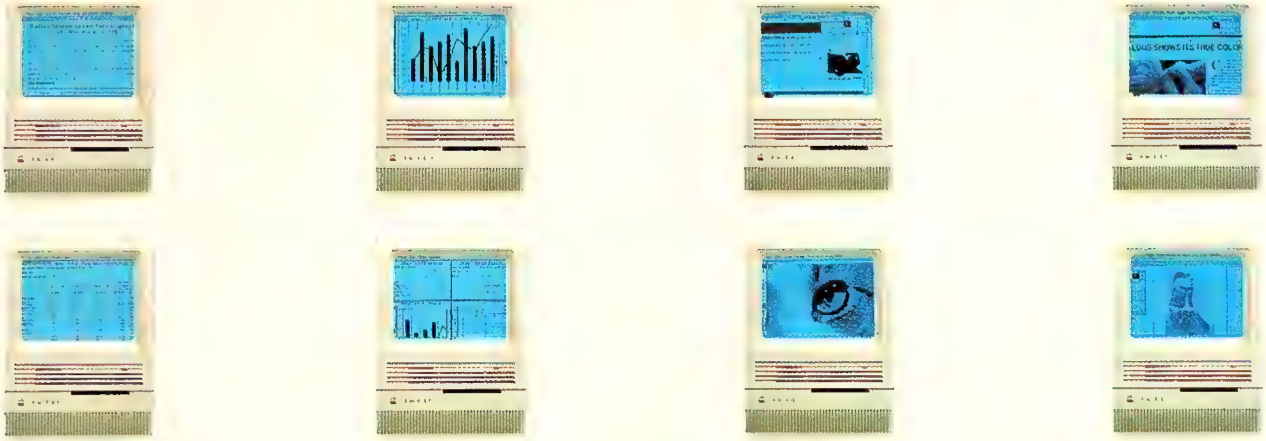
Freedom Of Press eliminates the need for a PostScript interpreter in your printer

There are several PostScript interpreters available that can use your computer's processing power to print any PostScript file on a variety of printers.

Freedom Of Press is one such interpreter. It can print PostScript files on printers such as the Hewlett-Packard LaserJet Plus, the Hewlett-Packard DeskJet, the Canon BJ 130, and several 24-pin dot-matrix printers. Several colour printers are also supported, according to the distributor Imprint Computer Publishing Systems.

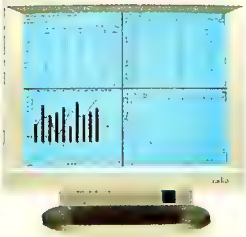
Freedom Of Press eliminates the need for a PostScript interpreter in the printer's controller board. As a bonus, it also will print downloadable fonts such as Bitstream's Fontware. The program does not work with Adobe's proprietary font format.

Freedom Of Press costs $596 and it comes with 35 Compugraphic Intellifont outline fonts similar to those resident in the Apple LaserWriter Plus. It requires an IBM PC or compatible, 512K or more of EMS expanded RAM, 1.2Mb floppy drive, 4Mb of hard disk space, and a maths co-processor is strongly recommended. Laser printers supported also need 1Mb of RAM to print full pages. Imprint Computer Publishing Systems: (02) 818 3577.



TO GET THE MOST OUT OF THOSE,

Radius Full Page Display



Radius Two Page Display

Radius Gray Scale Display

Radius Color Display

YOU DEFINITELY NEED ONE OF THESE.

If you have a detailed job to do on a Macintosh,® you should ensure you're able to see it accurately.

With Radius, you will. For a start, Radius monitors give you a greater image viewing area than other monitors, with more work-space on the display screen.

Secondly, Radius® monitors provide flicker-free, high fidelity, paper-like page images. What's their secret? Radius' state of the art design provides seventy-two "refreshes" per second – more than three times that of a normal video image. This eliminates ghosts, improves sharpness and reduces eye strain.

Control menus can be positioned to float where you like, simply by dragging them off the menu bar and onto the main screen. With Radius' "tear-off" menus you can make document changes quickly and effortlessly. It's a must for repetitive changes and deadline intensive operations.

Ergonomically, it all adds up to enhanced productivity and it's a Radius exclusive.

There are more exclusive features too.

Display clarity is the best in the business, starting with the Radius FPD which provides the full page view necessary for efficient document processing.

Radius' Two-Page Display is a must when you need to have it all laid out in front of you. Its double page spread is an impressive 1,152 x 864 pixels large.

Depending on your requirements the Radius TPD for the Macintosh II can either produce crisp black and white tones alone or present you with a kaleidoscope of photographic grey shades to work from.

Vibrant true-to-life colour imaging is a standard set by the Radius DirectColor™ system. The DirectColor 16/24 System with the QuickColor graphics accelerator gives professionals colour fidelity and operational speed never before available from a personal computer.

So, when you have detailed work which requires a big, reliable view, turn to Radius. With the whole range of compatable display systems for the Macintosh, there couldn't be a more reliable purchase.

Visit your authorised InfoMagic/Radius dealer for a demonstration.

You will discover that once you have used one of these, you'll never want to use those on a small screen again. For the dealer nearest you ring InfoMagic on any of the numbers listed below.

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The Radius and Macintosh screen images above, were photographed in normal WYSIWYG size on their respective displays. Images are actual and are not retouched.

CAD SOFTWARE

CAD has come a long way since PCs have been on the market. The market leader, AutoCAD, was one of the first CAD programs to bring technology to the PC market. Today's products address all aspects of the design process, and the inclusion of solid modelling and databases makes CAD tools an asset for the professional in design/engineering irregardless of experience.

This Buyers' Guide lists CAD programs available in Australia.

The following is a brief description of terms frequently mentioned in connection with CAD software, and which have been used in the Guide.

Auto dimensioning: Dimensions on a drawing are able to be extracted automatically.

Company	Address	Telephone	Product	Minimum memory requirement	AutoCAD standard supported	Menu driven	Text capability	2D/3D graphics capability
Amfac Pty Ltd	822 Elizabeth St, Waterloo, NSW	(02) 319 3077	MicroStation	640Kb	yes	yes	yes	both
Amtech	1 Boundary Rd, Northmead, NSW	(02) 683 4033	CADKEY	640Kb	yes	yes	yes	both
Autodesk Australia	9 Clifton St, Richmond, Vic	(03) 429 9888	Generic CADD Level 2+	512Kb	yes	yes	yes	2D
			Autosketch V 2.	512Kb	yes	yes	yes	2D
			Generic CADD Level 3+	512Kb	yes	yes	yes	2D
			Generic 3D drafting	640Kb	yes	yes	no	3D
			Generic 3D Solids	512Kb	N/A	yes	no	3D
Autographic Computer Services	282 Rokeby Rd, Subiaco, WA	(09) 381 2244	CADDSMAN	640Kb	yes	yes	yes	yes
CEANET Pty Ltd	56 Berry St, Nth Sydney, NSW	(02) 922 6311	DataCAD	640Kb	yes	yes	yes	both
			PC DOGS (Super)	640Kb	yes	yes	yes	2D
COMDA	55 Anderson St, Fortitude Valley, Qld	(07) 252 2011	Civilcad v.4.1	640Kb	yes	yes	yes	both
Comprador Business Systems Pty Ltd	90-94 Warren Rd, Smithfield, NSW	(02) 681 4000	AutoCAD	640Kb	yes	yes	yes	both
			AutoSOLID	4Mb	yes	yes	—	both

KEYS: 1 = Wireframe; 2 = Hidden lines removal; 3 = Colour; 4 = Surfaces; 5 = Solids; a = zoom; b = pan; c = scale; d = rotate; e = magnify.

The Buyers' Guide to CAD software is based on information provided by respondents to a survey. All details should be checked with the companies as listed.

Auto scaling: The visual screen is to scale.

Hidden lines removal: The object appears as it would to the human eye.

Layering: The software provides the ability to develop a drawing in separate layers to be viewed or printed individually or in any combination.

Shading: Images may be created to appear as if light is falling from one or more defined source.

Shadow: The illusion of shadows is possible

Solids: Objects may be treated as solid, which allows for calculation of mass and the addition or subtraction of three dimensional shapes.

Wireframe: Objects can be displayed as outlines.

Freehand drawing	Modelling types	Display capabilities	Shading	Shadow	Layering	Auto-dimensioning	Automatic scaling	Network support	Macros	Price ($A)	Company
yes	1234	abcde	yes	no	yes	yes	yes	yes	yes	$5,500	**Amfac Pty Ltd**
yes	12345	abcde	yes	yes	yes	yes	yes	yes	yes	$5,495	**Amtech**
yes	N/A	abcde	yes	no	yes	yes	yes	yes	yes	$395	**Autodesk Australia**
no	N/A	abcde	yes	no	yes	yes	yes	yes	no	$250	
yes	N/A	abcde	yes	no	yes	yes	yes	yes	yes	$595	
yes	1234	abcde	yes	no	yes	yes	yes	yes	yes	$345	
N/A	12345	abcde	yes	no	yes	no	yes	yes	yes	$645	
yes	1234	abcde	yes	no	yes	yes	yes	yes	yes	$3,995	**Autographic Computer Services**
yes	1234	abcde	yes	yes	yes	yes	yes	yes	yes	$5,320	**CEANET Pty Ltd**
yes	N/A	abcde	N/A	N/A	N/A	yes	yes	N/A	yes	$3,000	
yes	14	abc	no	no	yes	yes	yes	no	no	$4,500/ module	**COMDA**
yes	134	abcde	—	—	—	yes	—	yes	yes	$5,222	**Comprador Business Systems Pty Ltd**
—	15	abcde	—	—	—	—	yes	no	yes	$700	

KEYS: 1 = Wireframe; 2 = Hidden lines removal; 3 = Colour; 4 = Surfaces; 5 = Solids; a = zoom; b = pan; c = scale; d = rotate; e = magnify.

The Buyers' Guide to CAD software is based on information provided by respondents to a survey. All details should be checked with the companies as listed.

CAD SOFTWARE

Company	Address	Telephone	Product	Minimum memory requirement	AutoCAD standard supported	Menu driven	Text capability	2D/3D graphics capability
Elata Personal Computing Solutions	PO Box 279, Oberon, NSW	(063) 361 181	LaserCAD Professional	512Kb	yes	yes	yes	2D
			LaserCAD Personal	512Kb	yes	yes	yes	2D
			LaserCAD Apprentice	512Kb	yes	yes	yes	2D
Engineering Computer Sales Pty Ltd	11 Winterton Rd, Clayton, Vic	(03) 562 8444	ARIES	10Mb	yes	yes	yes	both
			ME10D	4Mb	yes	yes	yes	2D
			Drawbase	640Kb	yes	yes	yes	both
			Pathtrace	1Mb	yes	yes	yes	both
Fujitsu Australia	475 Victoria Ave, Chatswood, NSW	(02) 410 4555	Micro CADAM Plus	1Mb	yes	yes	yes	2.5D
Intercad Pty Ltd	10 Help St, Chatswood, NSW	(02) 410 9852	Pro-Engineer	8Mb	yes	yes	yes	both
Intergraph Corp	61 Talavera Rd, North Ryde, NSW	(02) 888 9900	Microstation	640Kb	yes	yes	yes	both
Kenelec Pty Ltd	48 Henderson Rd, Clayton, Vic	(03) 560 1011	ADRA CADRA III	4Mb	yes	yes	yes	both
New Image Salon System	321 Camberwell Rd, Camberwell, Vic	(03) 882 9088	Imageing software	2Mb	yes	yes	yes	2D
Prime Computer of Australia	15 Blue St, North Sydney, NSW	(02) 929 0044	Personal Designer	64Kb	yes	yes	yes	both
			VersaCAD Design	64Kb	yes	yes	yes	both
Qikdraw Systems Software	158 Gouger St, Adelaide, SA	(08) 231 1888	CAD CAM	640Kb	yes	yes	yes	both
Scientific Design	6 Pound Rd, Hornsby, NSW	(02) 484 8566	FastCAD	512Kb	yes	yes	yes	both
Software Suppliers	7 Avon Rd, North Ryde, NSW	(02) 888 1955	Design CAD 3D	640Kb	yes	yes	yes	3D
			Design CAD	512Kb	yes	yes	yes	2D
Technical Imports Australia	PO Box 176, Crows Nest, NSW	(02) 922 6833	DesignCAD 2D	512Kb	yes	yes	yes	2D
			Design CAD 3	640Kb	yes	yes	yes	3D
Vision Control	37 Thistlethwaite St, South Melbourne, Vic	(03) 696 6044	Topas 3D	640Kb	yes	yes	yes	3D

KEY: 1 = Wireframe; 2 = Hidden lines removal; 3 = Colour; 4 = Surfaces; 5 = Solids; a = zoom; b = pan; c = scale; d = rotate; e = magnify.

The Buyers' Guide to CAD software is based on information provided by respondents to a survey. All details should be checked with the companies as listed.

Freehand drawing	Modelling types	Display capabilities	Shading	Shadow	Layering	Auto-dimensioning	Automatic scaling	Network support	Macros	Price ($A)	Company
yes	N/A	abcde	no	no	yes	yes	yes	yes	no	$650	**Elata Personal Computing Solutions**
yes	N/A	abcde	no	no	yes	yes	yes	yes	no	$415	
yes	N/A	abcde	no	no	yes	yes	yes	yes	no	$179	
yes	12345	abcde	yes	no	yes	yes	yes	yes	yes	POA	**Engineering Computer Sales Pty Ltd**
yes	123	abcde	—	—	—	yes	yes	yes	yes	POA	
yes	123	abcde	yes	no	no	yes	yes	yes	yes	POA	
yes	1234	abcde	yes	no	yes	yes	yes	yes	yes	POA	
no	—	abcde	yes	no	yes	yes	yes	yes	yes	$6,000	**Fujitsu Australia**
yes	12345	abcde	yes	no	yes	yes	yes	yes	—	$24,000	**Intercad Pty Ltd**
yes	1234	abcde	yes	no	yes	yes	yes	yes	yes	$5,500	**Intergraph Corp**
yes	123	abcde	yes	yes	yes	yes	yes	yes	yes	$5,250	**Kenelec Pty Ltd**
yes	1345	acde	yes	yes	yes	yes	yes	no	no	$3,000	**New Image Salon System**
yes	1234	abcde	yes	yes	yes	yes	yes	yes	yes	$6,978	**Prime Computer of Australia**
yes	1234	abcde	yes	yes	yes	yes	yes	yes	yes	$4,992	
yes	1234	abcde	yes	no	yes	yes	yes	yes	yes	$5,000	**Qikdraw Systems Software**
no	123	abcde	no	no	yes	yes	yes	no	yes	$3,250 (2D) $4,250 (3D)	**Scientific Design**
no	12345	abcde	yes	yes	yes	yes	yes	no	yes	$670	**Software Suppliers**
yes	1234	abcde	yes	no	yes	yes	yes	no	yes	$520	
yes	—	abcde	yes	yes	yes	yes	yes	yes	yes	$425	**Technical Imports Australia**
yes	12345	abcde	yes	no	yes	yes	yes	yes	yes	$550	
yes	12345	abcde	yes	yes	yes	yes	yes	yes	yes	$3,792-$22,729	**Vision Control**

KEY: 1 = Wireframe; 2 = Hidden lines removal; 3 = Colour; 4 = Surfaces; 5 = Solids; a = zoom; b = pan; c = scale; d = rotate; e = magnify.

The Buyers' Guide to CAD software is based on information provided by respondents to a survey. All details should be checked with the companies as listed.

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ALLEGRO INTELLIGENT MODEMS

Smart, fast and well priced

Allegro intelligent modems are designed and manufactured in Australia.
They are designed to meet current Industry Standards and carry full Telecom Australia Authorisation and Advanced Product Support with our extended 24 month warranty and 12 month replacement guarantee.

Model 2424SA

Recommended by Telecom for connection into Austpac connected dial up services, this model is also ideal for Point of Sale Networks running at 2400/1200 or access into general purpose Electronic Mail Systems where cost issues are sensitive.

Model 2424PC

This is a fully internal modem designed to be installed into the IBM-PC/XT/AT environment where space and power consumption requirements demand installation of a fully integrated system requiring minimum external parts and cables.

Available from:

NSW	Microcomputer Spot Pty Ltd	(02) 221 1934
NSW	Compucare Pty Ltd	(02) 654 2166
ACT	McKellar Hall Microsystems	(062) 30 2470
VIC	Medusa Computer Solutions	(03) 375 4907
VIC	Mid West Computers	(03) 584 8222
QLD	Daregan Pty Ltd	(07) 200 9108
SA	Living Image	(08) 255 0647
WA	Unique Computing	(09) 389 8141
TAS	Eastern Computers	(002) 435 135

Manufactured by:

BIZTeL Product
Telephone (02) 607 0255
Fax (02) 608 1251

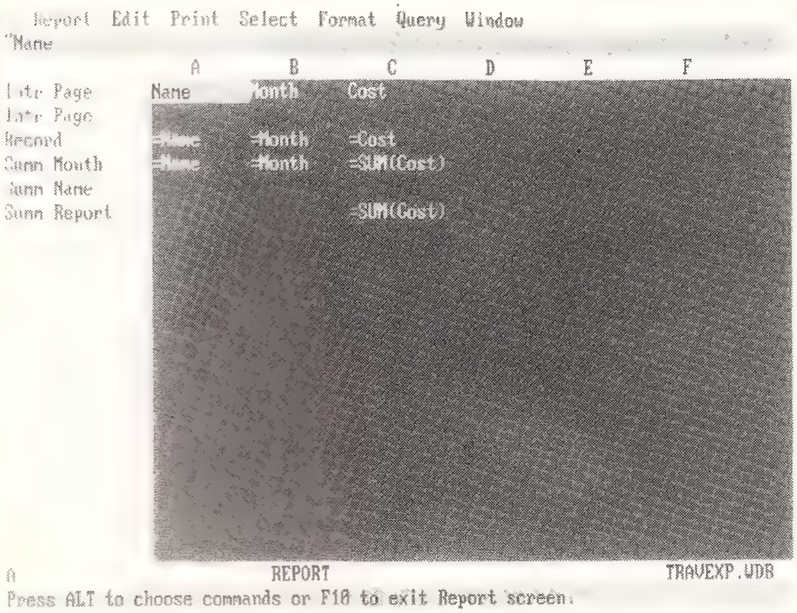
Allegro 2424......"Our modem of choice"
PC World Modem Comparison May 17, 1989

By Robert Carr

Integrating Microsoft works

With Microsoft Works, data-moving macros pave a fast track to integrated power. A few well-chosen keystrokes now can save hours of tedium later.

What you need: Microsoft Works.



```
  Report  Edit  Print  Select  Format  Query  Window
"Name
                    A          B          C          D          E          F
Intr Page        Name       Month      Cost
Intr Page
Record           =Name      =Month     =Cost
Summ Month       =Name      =Month     =SUM(Cost)
Summ Name
Summ Report                            =SUM(Cost)

                        REPORT                                   TRAVEXP.WDB
Press ALT to choose commands or F10 to exit Report screen.
```

SCREEN 1: This Works report will generate summaries of the database, broken down by individual, month, and cost

Microsoft Works' individual modules are capable enough, but using macros to transfer data between them really unlocks the package's power. This article will show how to write Works macros that quickly move information between the database, spreadsheet, and word processor. It also explains how to create a macro that greatly speeds chart making.

HOW TO RECORD AND SAVE WORKS MACROS

If you have not used Works macros, this quick exercise will get you started. First install the separate macro program MSKEY.COM and load it; then run Works. Invoke MSKEY by pressing **<Alt>**-**/**. To begin recording a macro that is triggered by **<Ctrl>-N**, for example, press MR (Macro Record), then **<Ctrl>-N**. Type your first and last names. End recording by pressing **<Alt>**-**/**, then **ME** (Macro End). Now, whenever you press **<Ctrl>-N**, you should see your name spelled out.

To save your macros, you must write them to a disk file. Press **<Alt>**-/FS to invoke MSKEY's File Save command. Then type a name for the file in which you will store your macros. If you later want to list the macros for reference, press **<Alt>-/FL** (File List).

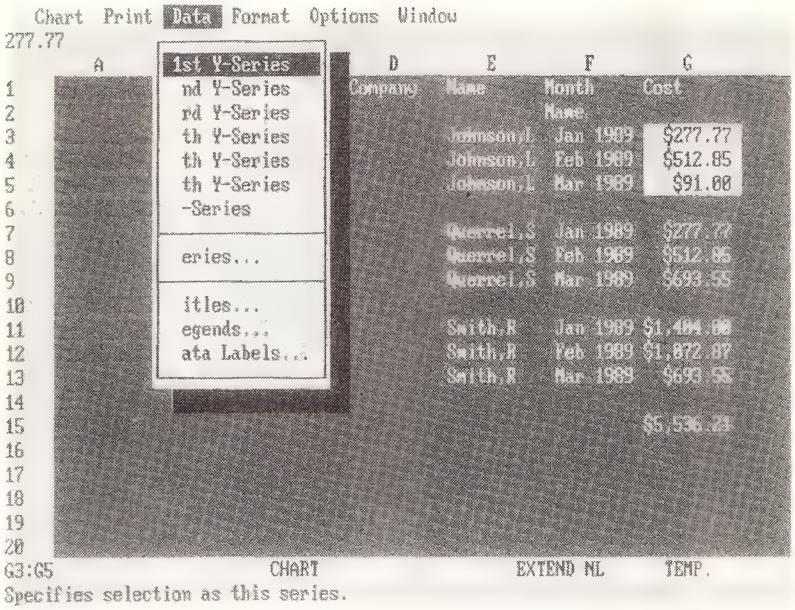
CREATE A CUT-AND-PASTE MACRO

If you frequently cut and paste data between modules, a simple macro can automate the transfer. In this example, we will move worksheet figures into a word processing file.

In any worksheet, press **<F8>** to extend the cursor, and mark the cells you want to copy. Press **<Alt>-/MR** to begin recording the macro. Call it **<Ctrl>-C** (for Copy).

Press **<Shift>-<F3><FT501>**, the spreadsheet's Copy command. Press **<Alt>-W** to pull down the Window menu. Press **<Alt>-/MF** (the fixed length command) to

HANDS ON



```
277.77
        A                     D          E          F           G
 1                         Company    Name       Month       Cost
 2                                               Name
 3                                    Johnson,L  Jan 1989     $277.77
 4                                    Johnson,L  Feb 1989     $512.85
 5                                    Johnson,L  Mar 1989      $91.00
 6
 7                                    Querrel,S  Jan 1989     $277.77
 8                                    Querrel,S  Feb 1989     $512.86
 9                                    Querrel,S  Mar 1989     $693.55
10
11                                    Smith,R    Jan 1989   $1,404.00
12                                    Smith,R    Feb 1989   $1,872.87
13                                    Smith,R    Mar 1989     $693.55
14
15                                                          $5,536.23
16
17
18
19
20
G3:G5                 CHART                    EXTEND NL     TEMP.
Specifies selection as this series.
```

SCREEN 2: As the charting macro executes, you are prompted to type the series number of the highlighted data

instruct the macro to record the number of characters you will enter next. (When the macro executes, it will pause for input after it puts down the Window menu.) Type the number that corresponds to the word processing window where you want to put the worksheet data, then press **<Alt>-/MF** to mark the end of the field. Whatever number of characters you type, the macro will expect all future answers to the Window prompt to be of the same length. Press **<Alt>-/ME** to end recording the macro.

To use the macro, mark the cells you want to copy, press **<Alt>-/** to invoke MSKEYS, then press **<Ctrl>-C**. This leaves you in the destination file but still in Copy mode; to complete the operation, put the cursor where you want to paste the data and press **<Enter>**.

MOVING DATA FROM THE DATA BASE TO THE SPREADSHEET

In this example, we will use a macro to quickly extract some employee travel expense data from a database and move it into the spreadsheet. The macro uses the database's Report option to summarise each individual's monthly expenses; then the macro writes the data to disk, and brings it into the spreadsheet module.

Before you start, create a dummy TEMP file in the database. Then open a new database file and set up columns for Name, Month, and Cost. Enter a dozen lines of sample data with January, February, and March expense figures for four employees. Create the report shown in SCREEN 1, then select it from the Reports menu.

Press **<Alt>-/** and **MR** to begin macro recording, and name the macro **<Ctrl>-R** (for Report). Press **<Alt>-RA** to pull down the Reports menu.

Now press **<Alt>-/MV** (MSKEYS' Vfid, or Variable Length Field, command) to instruct the macro to record all keystrokes until you press the **<Enter>** key. Unlike the previous macro, this one's prompt will expect future responses to vary in length.

Now enter **TEMP** as the report's temporary file name. You will be asked if you want to overwrite the existing Temp file; answer **yes**. (This way, when you run the actual macro later, it will automatically overwrite older Temp files.) Press **<Alt>-/MV** to mark the end of the variable field. Press **<Enter>** to complete the file name entry. Press **<Alt>-FO** (File Open); type Temp as the name of the file to open, and press **<Enter>S<Enter>** to open the file as a spreadsheet. Press **<Alt>-/ME** to end macro recording.

GRABBING DATA SERIES FOR CHARTS

Charting data in Microsoft Works is straightforward, but highlighting data series can be tedious. With this macro, you can grab data for each series with a single keystroke. The macro is especially powerful because it pauses each time you select a new data range.

The macro is designed to use the Temp report data in the spreadsheet (see SCREEN 2). With a different data layout, the macro keystrokes will vary slightly.

Open the Temp worksheet and enter Chart mode by pressing **<Alt>-CD.** Position the cursor at the top of the sequence of data you want to enter as successive series in the chart. Press **<Alt>-/MR** to begin recording, naming the macro **<Ctrl>-G** (for Grab). Press **<F8> <Cursor Down> <Cursor Down>** to extend the cursor and select the three cells of the first series (Johnson's January through to May expenses, in the example), then press **<Esc>** to end the Extend mode. Press **<Alt>-D** to enter the Data menu.

Now press **<Alt>-/MF** to instruct the macro to record the number of characters you will enter next. Press **1** to indicate that this is the first series. Then press **<Alt>-/MF** again to mark the end of the field. Press **<Cursor Down>** four times to move to the first cell of the next series. Press **<Alt>-/ME** to end recording.

To test the macro, press **<Ctrl>-G** several times. Each time the macro executes, it should open the Data menu and prompt you for the series number (1 to 6); when you type the number in, the macro should jump to the next series, ready for the next number.

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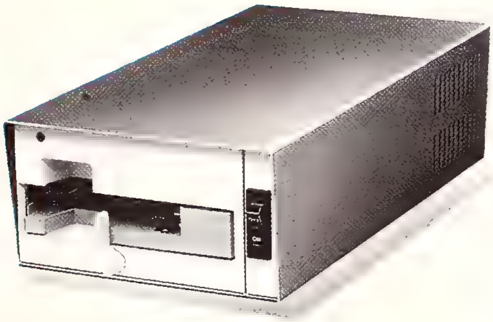

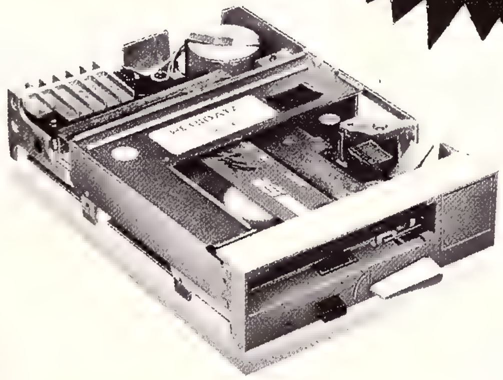

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Why you should not format 720k disks to 1.44Mb, associating with the DOS 4.0 shell, and COMParing DOS files.

Q. *I have found I can use a 1.44Mb drive to format a 720K (double-density) 3in floppy disk to 1.44Mb. Although sometimes FORMAT takes a few tries to complete the process, I have not had any problem reading data stored on such disks, and double-density disks are substantially less expensive than the high-density variety. Am I running any risk by doing this?*

Charles Knechtel

A. Yes. Both 3.5 and 5.25 in double-density disks have a magnetic coating their high-density cousins. The high-density coating is designed to accommodate the weaker magnetic field that high-density drives use when writing the denser format.

Because double-density disks are not made to hold this weaker signal, they usually contain a large number of bad sectors. (The repeated attempts to format those sectors, which will not hold data, is why the process sometimes takes so long.) Although the drive will not use those bad sectors, it will use sectors that are only marginally better.

Those marginal sectors will go bad a lot sooner than they would if they held a stronger signal. And there is the risk when such a sector goes bad, that you may not be able to recover the rest of the file to which it belongs. Except as an intermediary for transferring files, a high-density format on double-density media is a false economy.

Associate with DOS 4.0

Q. *I have discovered a feature of the DOS 4.0 File System that I cannot use: the ability to associate files. If a data file is associated with a particular program, you are meant to be able to simply highlight the data file's name and press <Enter> to automatically exit the DOS shell, run the associated application, and open the specified data file. It sounds great, but I cannot do it.*

After pressing <Tab> to move the selection cursor from the File System's Directory Tree into the Filename Area, I can use the cursor keys to highlight the name of a program (the first step in associating). But when I go to the Action Bar and open the File pulldown menu, the Associate item is unavailable the A in Associate is replaced by an asterisk, and trying to execute the command just produces a beep. I am working with an IBM XT 286 with a monochrome graphics (Hercules-compatible) monitor.

Jim Laidlaw

A. Because DOS 4.0 does not directly support Hercules graphics, its Select program installed the DOS shell program in text mode. (Adding the parameter/TEXT to the @ SHELLC command of DOSSHELL.BAT will force a graphics-based system into text mode.) Although similar in layout, the DOS shell's text-mode interface and its graphics-mode counterpart differ in a number of ways. For example, in graphics mode an icon appears to the left of each file name. When moving through the list of file names with the cursor keys, the user of the graphics-mode interface sees that the icons are not highlighted, suggesting that there is one more step to selecting a file name. In text mode, however, no icon is visible.

In either mode, mouse users simply click on the file name instead of using the cursor keys. In graphics mode, the icon is then highlighted; in text mode, a triangle called the selection symbol appears in the empty space to the left of the highlighted file entry. Click on the file name again, and the icon or selection symbol toggles off.

To select a file name without a mouse, simply cursor to the file name and press the <Space> bar. When the selection symbol or highlighted icon is present, you can select the Associate item from the File menu. In fact, you can select several file names and choose an action for them all: Just cursor to the first file name, press the <Space> bar to tag it, move on to your next choice, press the <Space> bar to tag it, and so on.

Note, however, that Associate is meant only for programs that can accept a data file name as a command-line parameter. For example, most word processors can load a document automatically when you start the program; to load a document called SALES.RPT into WordPerfect, you would simply enter WP SALES.RPT at the DOS prompt.

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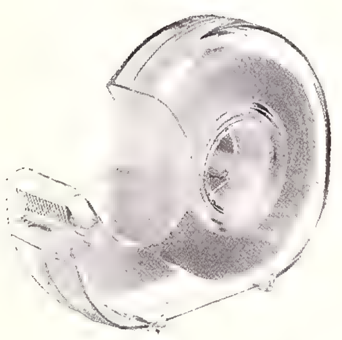

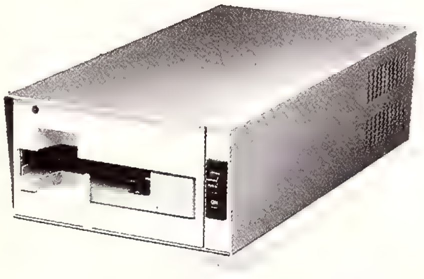

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COMPare DOS File Copies

When you use the DOS COPY command to copy a file from one disk to another, DOS flashes the message "1 file(s) copied'. But that does not necessarily mean that the new file matches the original. Using the VERIFY ON command in your AUTOEXEC.BAT file or adding the \V switch to a COPY command checks the version COPY stored in RAM against the new copy on disk. Even then, however, there is still a chance the copy is not accurate.

To make sure a copy is exact, use the COMP command (or FC in MS-DOS) to compare the original against the copy. If COMP is in a directory listed in your PATH command, you can simply type COMP and then press <F3> <Enter> right after COPYing to make the comparison.

Quick dBase duplicates

When working in dBase III Plus, it is often necessary to create a record that duplicates several fields in an existing record. To avoid excess work, you usually copy the record and edit the duplicate as desired. Otherwise, you are stuck using dBase's unwieldy duplication command, SET CARRY ON.

Here is a simple program, DUPREC.PRG, that uses a single function key to duplicate records:

```
SET TALK OFF
ERASE Temp.dbf
COPY next 1 to temp
APPEND from temp
""RECORD DUPLICATED"
SET TALK ON
```

Include the following line in your CONFIG.DB file:

```
F2 ="Do C:\db\Duprec;"
```

Now, all you need to do to duplicate the current record is press <F2>. The message "RECORD DUPLICATED' will flash on screen to confirm that the job is done.

Making Moves with DOS

Some disk management utilities move files easily from one sub-directory to another, but DOS lacks a single command for this function. You can use a short batch file that teams the COPY, DEL, and COMP commands to move and verify your files. At the DOS prompt, enter the following lines:

```
COPY CON move.bat
COPY %1 %2
COMP %1 %2
PAUSE: If files DO NOT compare ok, press <Ctrl>-<C> & terminate batch job
DEL %1
```

Now, press <Ctrl>Z (or<F6>) and then <Enter> to save MOVE.BAT. Move MOVE.BAT to any subdirectory listed in your system's PATH command.

MOVE.BAT in effect creates a MOVE command for DOS. To use it, type MOVE followed by the source file name and its destination (with or without a new file name).

MOVE.BAT pauses before deleting the original file, flashes a message telling you how well the original file and copy compare, and asks if you want to compare another file. Press <N>, and if the copy was successful, press any key to continue. If the status message shows any discrepancy between the files, press <Ctrl>-C to terminate the batch file and try again.

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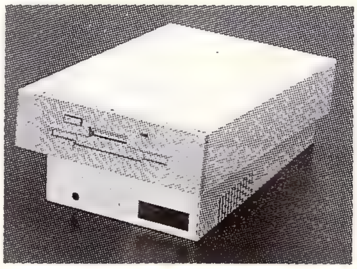

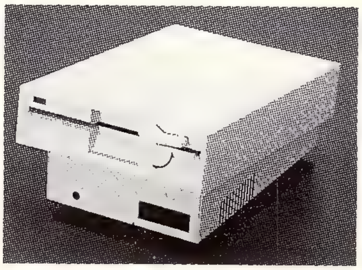

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TUTORIAL

By Roger Alford

Say goodbye to cable confusion

Don't let cables tie you up in knots. Sure, the world of PCs is inundated with them — parallel cables, serial cables, keyboard cables, video cables, extender cables, adaptor cables — the list seems endless. And it's true that your system won't work correctly unless all the appropriate cables are present and accounted for (and properly attached). But once you understand the basics of cables and connectors, you'll be able to sort through the jargon and know if you have the ones you need for your system — and how to buy them if you don't. Let's limit this trip into cabledom to the more common varieties — serial, parallel, keyboard, and video cables — and their associated connectors, adapters, and extenders. If you begin to feel tangled up in the terminology, the glossary should help straighten you out. (See "The Thigh Bone's Connected to the ..." on page126)

SERIAL CABLES (RS-232)

The RS-232 ports (also called RS-232C) on your computer (if your system has any) are serial ports through which the computer communicates with other serial devices — external modems, serial mice, and serial printers. (The term (F2)serial(F1) simply means that data is transmitted through the cable one bit at a time, as opposed to parallel transmission of eight or more bits at a time.) If your computer has more than one of these serial ports (also called communications ports), DOS tells them apart by numbering them COM1, COM2, COM3, COM4, and so on (although a computer generally has no more than four). The RS-232 ports on the original IBM PC and XT systems and most clone systems have D-shaped connectors with 25 "male" leads, or pins, in the centre. (Not all of the 25 pins are used.) When plugged into "female" pin receptacles, called sockets, in another connector, the pins transmit an electronic signal and close a circuit. These D-shaped, pin-type connectors are referred to as D-shell connectors or DB-25P connectors.

With the introduction of its AT machine, IBM defined a signal configuration, or pinout, using a D-shell connector with nine instead of 25 pins (DB-9P) for the machine's serial ports. (Only eight of the 25 pins are needed for PC to PC connection.) This small, space-saving connector has achieved a high level of popularity in the PC world and is now even found on many communications boards designed for PC and XT systems.

Since IBM-compatible systems use pin-type connectors for their serial ports, you must use a serial cable (also called a communications cable or RS-232 cable) to connect a serial port to another serial device. Standard serial cables can be either straight-through cables or null-modem cables. The serial cable must have a mating socket-type (DB-25S or DB-9S) connector on one end. Its other end must have an appropriate connector to mate with the connector on the remote peripheral device. Since most peripheral devices have a socket-type connector with 25 pin receptacles (DB-25S), the cable you attach to such a device usually must have a mating 25-pin (DB-25P) connector. If you are communicating with a device that has a pin-type connector, such as another PC, the serial cable will require a socket-type connector at both ends. As a rule, RS-232 serial cables should be kept to a maximum length of 15 metres, although cables more than double this length will work without a problem in most environments.

A problem arises when the serial port on your system has a 9-pin (DB-9P) connector and you want to communicate with a remote serial device that has a 25-pin socket-type (DB-25S) connector. Since the two systems do not have mating connectors with equal numbers of pins and sockets, you cannot use a conventional serial cable with a standard DB-25P connector on one end and a DB-25S connector on the other.

The solution is to use a 9-pin-to 25 pin adaptor cable to convert the nine-pin serial port to the signal configuration of the more standard 25-pin (DB-25P) serial port. You can then use standard serial cables to connect the computer's serial port to other devices. These adaptor cables are available from many PC vendors, and PC communications boards often come with one.

Some serial devices are considered data terminal equipment (DTE), while others are considered data communications or data circuit-terminating equipment (DCE). A DTE is a communications device — typically a computer - that is the source or destination of signals on a communications network. A DCE — typically a modem — establishes, maintains,

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THE THIGH BONE'S CONNECTED TO THE ...

ADAPTOR CABLE — a cable that allows one connector to mate with a dissimilar connector, with wires routed appropriately for a specific application.

CABLE — a group of wires routed together, generally within a single insulating sleeve, with a connector at each end. Also refers to the group of wires without any attached connectors.

CENTRONICS CONNECTOR — 36-pin connector used in the Centronics printer port, available in both male and female versions. Also called a ribbon connector.

CENTRONICS PRINTER PORT — see *parallel port.*

COMMUNICATIONS CABLE— see *serial cable.*

COMMUNICATIONS PORT — see *serial port.*

CONDUCTOR — wire in a cable through which the electronic signals pass.

CONNECTOR — a cable, or the plug and socket found at the ends of a cable, used to link two devices together.

DATA CIRCUIT-TERMINATING EQUIPMENT — see *data communications equipment* and *DCE.*

DATA COMMUNICATIONS EQUIPMENT — any communications device, typically a modem, that establishes, maintains, and terminates transmission over a communications line and may also convert the signals from the terminal or computer for transmission over a channel.

DATA TERMINAL EQUIPMENT — any communications device, typically a terminal or computer, that is the source or destination of signals on a communications network.

DB-9P;DB-9S;DB-25P;DB-25S — see *D-shell connector.*

DCE — *data circuit-terminating equipment;* see *data communications equipment.*

DIN CONNECTOR — a plug and socket used to connect PC keyboards and other devices.

D-SHELL CONNECTOR — a "D"-shaped connector with pins or pin receptacles (sockets) in the centre. Common D-shell connectors in the PC world are the 9-pin DB-9 and the 25-pin DB-25. Male versions have a P (pin) suffix, while female versions have an S (socket) suffix.

DTE — see *data terminal equipment.*

EXTENDER CABLE — a cable used to extend the length of an existing cable. Has a female connector on one end and a mating male connector on the other end. All appropriate wires are routed in "straight-through" fashion.

KEYBOARD CABLE — the cable that connects a PC keyboard to a PC.

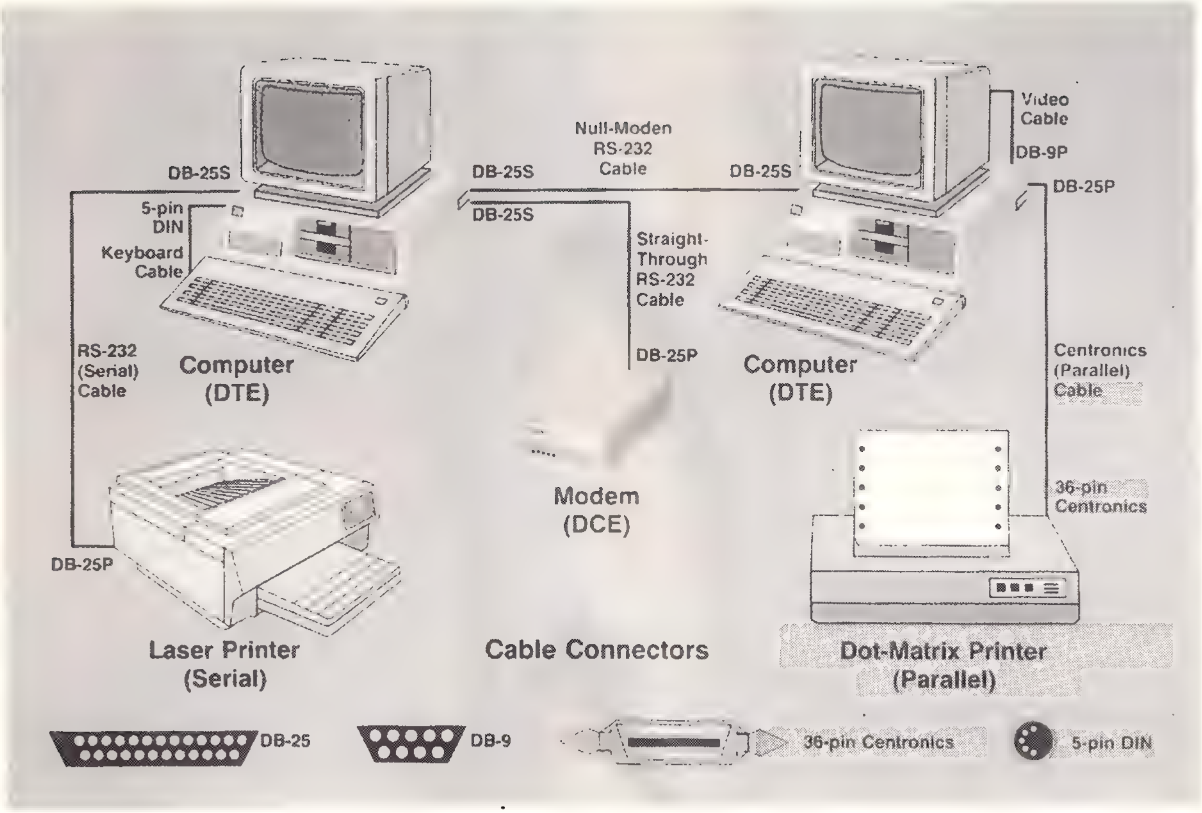
KEYBOARD EXTENDER CABLE — see *extender cable.*

NULL-MODEM CABLE — a serial cable with several wire-pairs swapped to allow two similar devices (DTE-DTE or DCE-DCE) to communicate with each other.

PARALLEL CABLE — the cable used to connect the parallel port of a PC to a printer having a parallel printer interface. The interface is commonly called the Centronics interface.

PARALLEL PORT — an interface used to connect a PC to a parallel

continued page 131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RS-232 (Serial) Cable
Computer (DTE)
DB-25P
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DB-25S
DB-25S
DB-25S
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36-pin Centronics
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DB-25
DB-9
36-pin Centronics
5-pin DIN

***CABLE CONNECTIONS:** The diagram shows some common cable connections and the types of cables and cable connectors used. (The connector designations — DB-25P, DB-25S, DB-9P, 5-pin DIN, and 36-pin Centronics — refer only to the connectors found at the ends of the cables. The mating port connectors found on computers and peripherals are not shown.)*

and terminates transmission and may also convert the signals from the DTE for transmission over the channel.

The difference between a DTE and a DCE lies in how the electronic signal conductors (wires) at the DB-25 connector are arranged. If you connect a DTE device to a DCE device (for example, a computer to a modem), you will need to use a straight-through serial cable. If you connect a DTE device to another DTE device, you will need to use a null-modem serial cable.

For the best data integrity, you should use a shielded cable, which has a metal shield of braided wire or aluminium foil surrounding the cable conductors, or wires, through which the signals travel. The shielding keeps outside electromagnetic interference (EMI) from disrupting the signals passing through the conductors. Shielded cables usually have an uninsulated drain wire that runs the length of the cable in contact with the cable shield.

Sometimes an existing cable of the correct signal configuration will not be long enough to connect your computer to a remote serial device.

In this situation, an extender cable can be used to add the extra cable length needed to reach the remote device. A serial extender cable is always a straight-through cable with a DB-25S connector on one end and a DB-25P connector on the other.

PARALLEL CABLES

In addition to an RS-232 port, most PC compatibles have a parallel port (also called a parallel printer port or a Centronics printer port), which you use to interface your computer to a standard parallel printer. The connectors normally associated with the Centronics interface have 36 pins. Commonly called Centronics connectors, they are referred to as ribbon connectors in the connector industry. This type of connector is available in mating male and female designs.

Because of the larger size of the 36-pin Centronics connector, IBM chose to conserve space by using a 25-pin D-shell socket-type (DB-25S) connector for its parallel port instead of the conventional Centronics connector. Thus, the parallel cable that connects your PC's parallel port to your printer must have a 25-pin D-shell (DB-25P) connector on one end to mate with your PC's parallel port connector, and a 36-pin Centronics connector on the other end to mate with your printer's socket-type Centronics connector. (Printers always have female connectors.)

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To help complete your entry, we've supplied background information on those product categories which may not be self-explanatory.

CATEGORY DESCRIPTIONS

- Dot Matrix/NLQ Printer – Dot Matrix printers that provide a draft-quality print mode or combine dot matrix and near letter quality (NLQ) print modes.
- Monitor – VGA, EGA, color, monochrome, or 'paper-white' displays.
- Memory Expansion Board – Boards that supply additional conventional or expanded (EMS) system memory. Boards in this category may also include a clock/calendar and parallel or serial ports.
- Graphics Board – Boards that offer VGA, EGA, CGA, or Hercules compatible graphics. Please specify whether your chosen board is monochrome or color.
- Mass Storage – All forms of mass storage such as disk drives, removable high-capacity drives, optical disks, and backup units.
- Input Devices – Scanners, mice, keyboards, digitising tablets, light pens and so on.
- LAN Boards – Expansion boards that link PCs in a LAN (not the name of the network's file server).
- Relational Database – Powerful relational data management programs that feature large record capacities, sophisticated query systems, full-blown report writers, text import and export capabilities, and command languages.
- Flat-File Database – Flat-file data management programs that operate on only one file at a time and are often used to maintain mailing lists, contact lists, and the like.
- Utility – Programs that perform functions not typically provided by the operating system, such as file recovery, management, or conversion; macro and keyboard enhancement; disk emulation; and printer support.
- Desktop Organiser – Products that replace such aids as the telephone directory, notepad, adding machine, appointment scheduler, and others (either single-user or LAN versions).
- Business Graphics – Programs that produce several types of charts and are used for business presentations.

Conditions of entry:

1. All entries must be completed on the official form.
2. Employees of IDG Communications and members of their families are not eligible to enter.
3. Residents of South Australia are not eligible to enter, as this trade promotion is in contravention of South Australia State Laws, according to the Lottery and Gaming Act of 1936.
4. Competition closes last mail, September 29, 1989.
5. The winner will be announced at a luncheon in Sydney, on Thursday, October 19, 1989. It will also appear in PC World, issue dated November 1, 1989.
6. The competition is conducted in accordance with State and Federal Lottery Gaming Regulations, under the following permits; NSW Permit Number TC 89/2020; issued under the Lotteries and Art Unions Act 1901; NT Permit number NT 0055/89; all issued on 18.7.89.

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One entry per reader. Winners will be announced in the November 1 issue of PC World.

Use this entry form to vote for products with which you are familiar and would recommend based on their performance and value. Choose ONE PRODUCT ONLY PER CATEGORY. It is not necessary to vote in all categories since you must be familiar with the products. Eligible products must be commercially available as of July 1 1989. To ensure accuracy, votes must contain the manufacturer's name, product name, model and version number, if applicable. Please print or type your entry and submit it by September 29, 1989. We also invite you to vote for the best Australian hardware and software product regardless of type.

When you mail your entry, you'll be doing more than simply voicing an opinion — you'll also make yourself instantly eligible for prizes worth over $15,000.

If you have previously returned an entry form disregard this form. Your original entry will be included in the draw.

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First prize will consist of the PC World Super System, the top voted system configured from a PC, monitor, add-on board, dot matrix printer, modem and integrated software package. Additional prizes will be various hardware and software products which are voted best performance and value in the categories.

PC HARDWARE PRODUCT

CATEGORY	MANUFACTURER	NAME OF PRODUCT	MODEL
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LAPTOP COMPUTER			
TRANSPORTABLE COMPUTER			
DOT MATRIX/NLQ PRINTER			
LASER PRINTER			
MONITOR			
MODEM			
MEMORY EXPANSION BOARD			
GRAPHICS BOARD			
MASS STORAGE			
INPUT DEVICE			
LAN BOARD			
BEST AUSTRALIAN PRODUCT			

PC SOFTWARE PRODUCT

CATEGORY	MANUFACTURER	NAME OF PRODUCT	VERSION
WORD PROCESSING			
DESKTOP PUBLISHING			
SPREADSHEET			
RELATIONAL DATABASE			
FLAT-FILE DATABASE			
UTILITY			
COMMUNICATIONS			
DESKTOP ORGANISER			
PROGRAMMING LANGUAGE			
INTEGRATED			
OPERATING ENVIRONMENT			
BUSINESS GRAPHICS			
COMPUTER-AIDED-DESIGN (CAD)			
ACCOUNTING			
LAN OPERATING SYSTEM			
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Standard IBM PC printer cables, available from numerous sources, are configured with these connectors and have the appropriate conductor routing between the connectors.

Although no damage will occur if you use the wrong type of cable when connecting two serial devices, never plug a serial cable into a parallel port. Doing so could damage your parallel circuitry!

Three to four metres is the practical length limit for parallel cables; longer ones may give you problems with data integrity. Again, a shielded cable is best. Because of the relatively short length of the parallel cables, extender cables are not generally used with them.

KEYBOARD AND VIDEO CABLES

A keyboard for an IBM-compatible computer comes with its own attached cable, which has a 5-pin male plug called a DIN connector on one end to attach to your computer. The PC has a mating female socket-type DIN connector with 5 pin receptacles.

There are times — such as when a PC is placed into a floor stand — that the keyboard cable is too short. In this event, you can purchase a keyboard extender cable with a 5-pin male DIN connector on the other. This will give your keyboard the extra reach it needs to connect to your computer.

The keyboard's electronic signals are similar to those used in the parallel port; thus three metres is a reasonable length limitation. Again, using a shielded cable is preferable.

Most video boards have a female, socket-type D-shell connector with 9-pin receptacles (DB-9S). IBM's Video Graphics Array (VGA), however, has a similarly sized D-shell connector with 15-pin receptacles. Your monitor should come with an appropriate cable that has a DB-9P connector on one end for connecting to your video board.

Video extender cables are also available if you need your video monitor farther from your computer than your current video cable permits. Remember, however, that the quality of your video image is affected by surrounding EMI, so you should keep the length of the video cable to a minimum and use a shielded cable. Depending on your environment, a cable length of three metres may be too long, so keep it as short as you can.

THE RIGHT STUFF

Now that you're familiar with the jargon of cables and connections, take a look at the cables that came with your system; or, if you're buying your first computer, take this Hardware Helper (or at least the side-bar) with you when you shop. Examine as many different types of cables, connectors, adapters, and extenders as possible. Remember: The first and most important step in connecting your computer to another device is finding the right cable for the right job.

THIGH BONE'S CONNECTED TO THE...

From page 126

printer. Typically uses a DB-25 connector at the computer end and a Centronics 36-pin connector at the printer end.

PARALLEL PRINTER PORT — see *parallel port.*

PIN — one of the "male" leads on a multiple line plug, such as an RS-232 connector. Each pin is connected with its "female" counterpart to close a circuit.

PINOUT — the configuration of electronic signals transmitted through each pin in a connector.

RS-232 CABLE — see *serial cable.*

RS-232 PORT — see *serial port.*

RIBBON CONNECTOR — see *Centronics connector.*

SERIAL CABLE — the cable used to connect the serial (RS-232) port of a PC to another serial device, such as an external modem or serial mouse. Also called an RS-232 or a communications cable.

SERIAL CABLE — the cable used to connect the serial (RS-232) port of a PC to another serial device, such as an external modem or serial mouse. Also called an RS-232 or a communications cable.

SERIAL PORT — the external interface used to attach a serial device, such as a modem, mouse, or printer, to a PC. *serial* implies that data is transmitted over the lines one bit at a time. Also called an RS-232 port.

SHIELDED CABLE — a cable in which the conductors are wrapped with a metal wire mesh or aluminium foil to protect them from environmental electrical interference.

SOCKET — a "female" or pin receptacle-type connector used to link all varieties of electronic devices. Mates with a "male" or pin-type plug.

STRAIGHT-THROUGH CABLE — a cable with the conductors routed directly, pin-to-pin, between the two cable connectors: pin 1 to pin 1, pin 2 to pin 2, and so on. The term is commonly used to refer to serial cables, but it can also be applied to other cables, such as extender cables.

VIDEO CABLE — the cable that connects a vide monitor to the video interface adapter in a PC.

(Q)An extender can add the extra length needed to connect your computer to a remote serial device

(Q)Now that you are familiar with the jargon of cables and connectors, take a look at the cables that came with your system

DOSCOVERIES

Re-installing Windows:

A whale of a workaround

As far as I am concerned, the biggest joke in the PC industry is the notion that Microsoft Windows is *user-friendly*. Windows? The program that will not let you assign a default directory? The program that will not sort files by extension unless you ask it to? The program that offers no way to even view a measly file? User-friendly? I am sorry, someone is on drugs — Windows may be beautiful on the outside, but on the inside it is a shrew.

I feel as if I am making an Alka-Seltzer commercial: I hate it, but I use it twice a day. I can deal with feeling general contempt for Windows — my problem is that while I am hating it twice a day, I am not always hating it in the same way. I have two monitors and four display types — Hercules, EGA, VGA, and dual-page high-resolution — and specific needs for running Windows on one or the other. I want to be able to tell Windows to run in EGA and, 20 minutes later, tell it to run in Hercules. Is that such an outrageous request? I want Windows to be quick on its feet, but alas, it was carefully crafted to be an enormous beached whale sitting in the middle of my directory structure.

I called Microsoft tech support to ask how I could change my Windows setup at run-time, and they told me I could not. But, said the man on the telephone, I could keep more than one copy of it in my system by installing it into separate sub-directories.

Now let me see if I understand this ... I should install Windows four times on one hard drive. I should try to maintain four separate WIN.INI files and I should install Windows printer and screen fonts four times. In sum, it is going to cost me over 10Mb of disk space for the luxury of running Windows in each of my display modes.

This was clearly a job for

By Rick Altman

SWAT:Survive Windows' Awful Tyranny. At least most of it — my solution did require me to install Windows four times, but not all the way through and not in four separate directories. The two files that contain the heart and soul of Windows are WIN200.OVL and WIN200.BIN, while all the other files are the same, from one configuration to another. With a bit of batch file work, I am able to switch Windows configurations at run-time, from a sub-directory that is the size of only one beached whale, not four.

THE ORDEAL

If you have more than one configuration in which you want to run Windows — different mouse or screen setups — here are the steps you can take to make the experience only slightly traumatic:

1. Install Windows, choosing one of your configurations. Answer all the dumb questions, swap all the disks, and eat all your green beans;
2. When done (and when you have run it once to make sure it is right), change to your Windows directory and rename WIN200.OVL and WIN200.BIN, using names that represent the desired configuration, like EGA.OVL and EGA.BIN;
3. Re-install Windows, this time choosing your next desired configuration. Choose the same directory and answer all the right questions, but only go as far as the second disk swap. When Windows tells you to choose a printer, tell it to go to hell with a swift Ctrl-X.

Windows will respond with a message that the installation did not succeed, but you can laugh in its face, because all you needed was for it to create the two big WIN200 files. Switch to the Windows directory and you will see them there, in all their obese splendour. Rename them to your other configuration — maybe VGA.BIN and VGA.OVL. Perform this series of steps for as many configurations in which you would like to run Windows.

TAMING OF THE SHREW

Figure 1 shows a modified WIN.BAT file that configures Windows and then runs it. If you just type WIN, Line 4 observes that you have not included any parameter and jumps you down to Line 8, where Windows is run with no modification to its configuration. If you type WIN EGA (assuming you created EGA.BIN and .OVL files), Lines 5 and 6 copy those files to the critical filenames, providing Windows with an EGA personality. Typing WIN VGA would have taken VGA.BIN and VGA.OVL and copied them into place.

The seldom-used SHIFT command accommodates for a second parameter, as well as no parameter at all. Typing WIN VGA DESIGNER activates the VGA configuration, starts Windows, and loads the application called Designer. If you want to designate an application to start but you do not want to change the Windows configuration, just type a bogus first parameter like WIN BOGUS DESIGNER. The batch file will look for BOGUS.BIN and .OVL, not find them, not copy anything, and then load Windows and Designer.

WIN.BAT

```
1. echo off
2. c:
3. cd \windows
4. if "%1"==""go to start
5. copy %1.bin win200.bin
6. copy %1.ovl win200.ovl
7. shift
8. :start
9. win % 1
```

Figure 1

Copying the large configuration files into place takes longer than renaming them, but the process is much safer — you adventuresome speed demons could rename the files, then revert to the original names as the batch file concludes, but if you hang up inside Windows and have to reboot, you will have to do some manual untangling in the Windows directory.

Once you trudge through all of the re-installing, this technique is a relatively simple and painless way to provide Windows with multiple personalities. Each time I use WIN.BAT, I rejoice in the time and disk space that it saves me, and wonder about the foresight of those who designed the Windows installation in a vacuum. Then I shudder in disbelief when I imagine following Microsoft's directions and plopping four 2.5Mb whales in my C drive. PC

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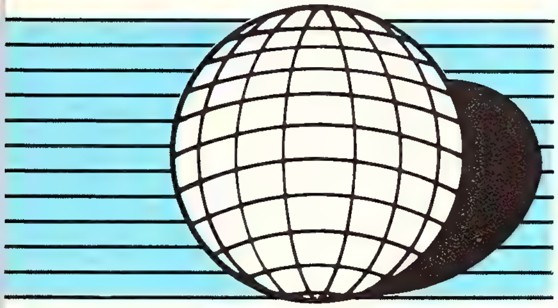
WORLD OF LOTUS



Release 3: *questions and answers*

1. We have nearly all of our financial data stored in the .WK1 format made by 1-2-3 Release 2.01 ? will we need to re-key or change any of this data for use with Release 3?

No. All .WK1 files created in Release 2.01 are fully compatible with Release 3. In fact, Release 3 can read and modify these files and then write them back as .WK1 files if required. If you create a file from scratch in Release 3 it will be saved with the default .WK3 extension.

This compatibility is a tremendous aid for those users who wish to pass files between Release 2.01 and Release 3 systems and means that using both versions within the one organisation is very easy.

2. Will all of the macros I have written in Release 2.01 run OK in Release 3?

Like files, Release 3 will run macros written for Release 2.01 files.

The only real area of potential incompatibility is where macros call menu options based on moving along the 1-2-3 menus using the macro RIGHT or LEFT commands, as opposed to calling menu options based on the first letter of the menu choice.

This inconsistency only occurs where Release 3 menus have been enhanced with additional options.

3.When i load a WK1 file into Release 3 it seems to take up more memory than it does on disk - why is this?

You can expect that Release 3 will use more space in memory than the file occupies on disk. Not unexpectedly, the added functionality of Release 3 requires some additional memory to manage the overheads associated with the 3D environment, background printing, and restartable re-calculation.

Files in the 20-30K region may require up to one third more memory (than their size on disk); however, this is very much dependent on the structure and content of the file. As file size increases, this overhead diminishes.

For more information on how Release 3 uses memory and how you can reduce memory requirements, refer to Appendiix 4 page 4 of your Reference Manual.

4. How can I tell exactly what fonts, print sizes, and hatch patterns I can print on my Apple LaserWriter?

The design of Release 3 allows you to readily print a sample output from the Apple LaserWriter (or any other installed printer for that matter) right from the Print Menu.

This sample output will give you a set of handy reference sheets showing all of the print opitions for text and graphics that are supported by Release 3. The keystroke sequence to use is: **/Print Printer Sample Go Quit**

5. Lotus has said that Release 2.2 is the product of choice for the 640K DOS XT class of PC ? will it be able to operate on AT (80286) and 80386 machines?

Although Release 2.2 has been optimised for the 8088/86 based PC, it is also designed to take advantage of the added processing power provided by the 80286 and 80386 chip.

This means that the user will see no alteration in the operation of Release 2.2 from one machine to the other — save for an increase in speed on the AT and 80386 class machine. PC

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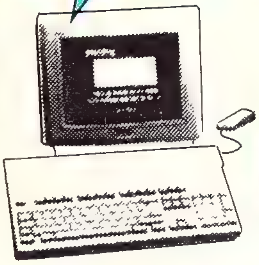

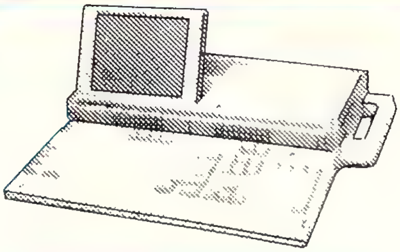

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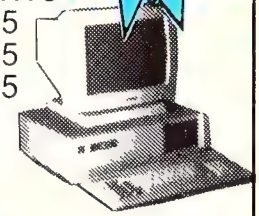

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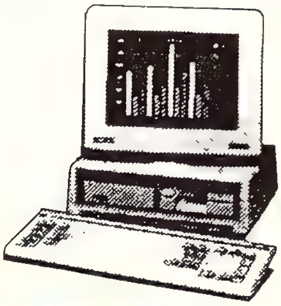

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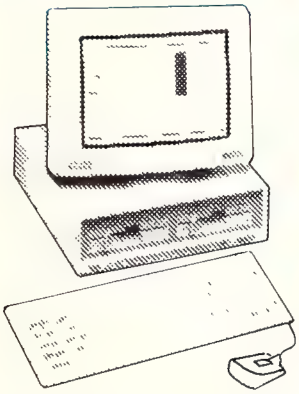

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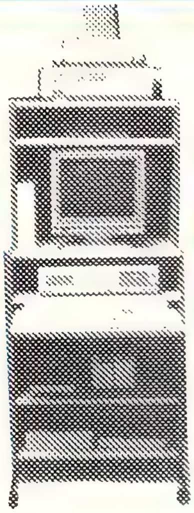

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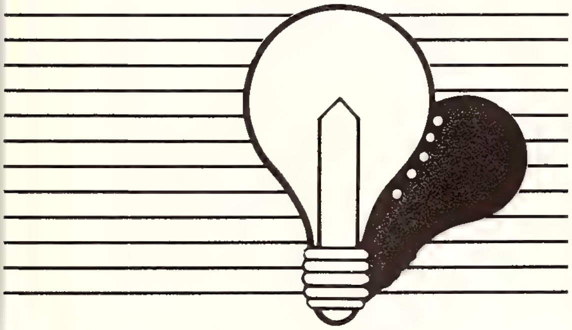
DR FAGAN'S TIPS

By Matthew Fagan

Make it simple!



After LINKers, some of the most important programs ignored by programmers are the other programs which come free with many compilers, namely LIB and MAKE.

While libraries are a mystery to many, they are often a simple concatenation of compiled files with an index up the front. It is much easier to handle a single LIB file than many individual programs. This is especially true in a team effort. There are only half a dozen simple commands in the LIB.EXE which comes with Microsoft languages. Type LIB to make an empty library, LIB + *name* to add an OBJ file or LIB -*name* to delete one. In subsequent linking, you can present the new library you have constructed when the linker asks for libraries. The linker will then take only those modules called. While there are faster and more sophisticated library managers such as Polytron's POLYLIB, it is important to make a start.

Equally important is a MAKE facility. MAKE is free with most Microsoft compilers today in their full form. In the current QUICK compilers, new programmers have a revolutionary integrated environment which disguises the LINK step. Programs and programmers eventually outgrow this development system for all but the early testing. As the program grows, there is a normal progression to the separate compile and link steps. It is at this step, with a large number of modules, that a MAKE is extremely important. The individual modules in a large QUICK program can be compiled and maintained separately and joined at LINK time. The maintenance of these modules, however, raises a problem.

Failure to compile just one module in a set can produce weird results which take days to identify. In fact the source of the problem is often discovered eventually only when dates are checked as a last resort. For this reason, many programmers still compile everything and to add insult to injury, often in one big module! This is a monumental waste of time. Use of a MAKE facility is a very simple and effective solution.

At its lowest level, a MAKE can be described and used as a smart-time and date-dependent batch facility. Just using a MAKE to compile a module if and only if it has been changed can greatly reduce the edit/compile/link time for large programs. As an example, a typical application in QuickBASIC could involve the following, where we have two modules, ENTRY and CALC to form one program. Following is the file input to the MAKE program.

```
    ENTRY.OBJ:    ENTRY.BAS
HEADER.BAS BC ENTRY;

    CALC.OBJ:      CALC.BAS
HEADER.BAS BC CALC;

    TESTPROG.EXE: ENTRY.obj
CALC.obj LINK ENTRY + CALC,
ENTRY;
```

There are three possible operations described, two compiles and a link. In each case, the statement after the dependency line will execute if and only if the date and time of the dependent target is earlier than that of the files after the colon.

While changing ENTRY.BAS will force its recompilation, CALC will not be recompiled. However, if HEADER.BAS changes, both programs will be recompiled. In either event, recompilation will force the LINK operation. If nothing has changed, nothing happens. The operation is extremely simple. The time saving is so great that I plead with everyone who has not used a MAKE to get their hands on one and try it.

While both Librarians and MAKE facilities are useful, they are often mutually exclusive. The LIB of Microsoft simply does not keep the time and date of modules in its library index. This time and date is of course essential for the operation of a MAKE facility. In addition, with its elementary organisation, Microsoft's LIB is very slow at adding or deleting modules. Programmers can combine MAKE and LIB facilities by using professional products such as Polytron's matching POLYLIB and POLYMAKE programs, which are more powerful while just as simple to use as the more elementary products. POLYLIB stores modules intelligently and quickly and keeps an index which includes the time/date stamp. With a matching POLYMAKE which reads this index, you can have both the simplicity of library storage and the security of maintenance of a MAKE facility.

It is important that the current explosion of highly modular languages be matched by an awareness of the many tools which exist for the simple and efficient management of modular programs. Programmers, in any event, owe it to themselves to investigate the enormous time savings of a MAKE facility and simplicity of a library manager, which often come free with their compiler.

● ***Dr Matthew Fagan is managing director of Fagan Microprocessor Systems. (03) 699 9899.***

By Michael Miller

Many Lotus users will choose Release 2.2

If Lotus 1-2-3, Release 3.0 caused major shocks in the spreadsheet arena, Release 2.2 is an aftershock that may prove just as important to some users.

While 3.0 is a complete revision of 1-2-3, Release 2.2 simply builds upon Release 2.01, adding more sophisticated graphics and linking, among other benefits. Release 2.2 is not as sophisticated as 3.0, but it does work on a much wider range of machines, requiring just 320K and two floppy disk drives (but you will need more memory for large spreadsheets).

Release 2.2 adds a linking feature that lets you link values from cells located in other worksheets. To do this, you simply create an equation such as "+<<EASTERN.WK1>>B6". These links can involve a single cell or a named range, and you can copy the linked formulas into other cells. One limitation is that you cannot use these links within formulas, so you cannot add cells from multiple spreadsheets.

This method of linking is particularly suited for "linked-file" applications, in which you simply bring in data that may reside in different cells on multiple spreadsheets. To create a "linked-page" model where you want to consolidate information from multiple spreadsheets, you would be much better off using the 3-D multi-page features available in Release 3.0 or the old File Combine method.

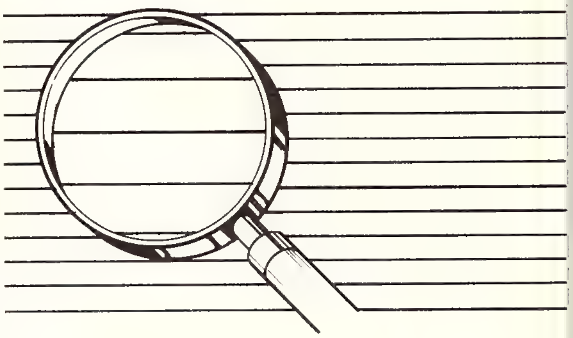
Release 2.2 adds a number of graphics features; most are also in Release 3.0. Graphs look better, with improved patterns and colours and labels that are automatically staggered to avoid overlapping. One nice change is the capability to choose data ranges, data labels, and legends in groups, rather than one at a time. Release 2.2 does not have the more advanced new graphics types of Release 3.0, such as graphs with dual Y-axes.

One significant change is that the add-in manager is now a part of Release 2.2, rather than being invoked as a separate file in Release 2.01.

However, Lotus acknowledged that not all Release 2.01 add-ins will work with Release 2.2, although most of the programs should require only minor changes (in contrast to the major changes under Release 3.0). I got almost all Release 2.01 add-ins to load under Release 2.2, but I had some problems: Once you have attached add-ins, even when you "cleared" and removed all your add-ins, you may not have as much conventional memory remaining as before you loaded them.

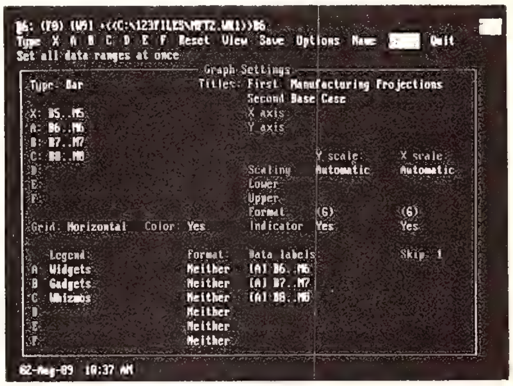
This is sometimes cumulative, and (perhaps as a result), attaching and detaching lots of add-ins could hang the program. You should be sceptical of all add-ins until their manufacturers explicitly support 1-2-3 Release 2.2.

One add-in that is included with the new version is Allways, a utility that lets you work in a graphics mode, set and view fonts on-screen, and combine spreadsheet data and graphs within the same page. A new add-in that comes with Release 2.2 is the Macro Library Manager, which lets you create libraries of macros. Other macro changes include new commands to turn the borders on and off, display a series of graphs and exit temp-orarily to the system, as well as better macro debugging.New "Settings Sheets" appear whenever you choose Graph or Print commands and show all of your options yet let you toggle back to your spreadsheet. Release 3.0 does not have such a feature.



All in all, Release 2.2 is a relatively painless upgrade, particularly for users who do not have the 80286 or 80386 and the 1Mb of memory required for 3.0. Release 2.2 costs the same as Release 3.0 at $855. Imagineering has a special upgrade of $55 for those who bought Release 2.01 after September 1, 1988; For those who purchased version 2.01 before that date, it will cost $250.

If you have more advanced hardware, Release 3.0 may be better. For the same price, you have to give up Allways and other Release 2.0 add-ins, but you get a more advanced spreadsheet, with multi-page models, better graphics, and more efficient use of memory.



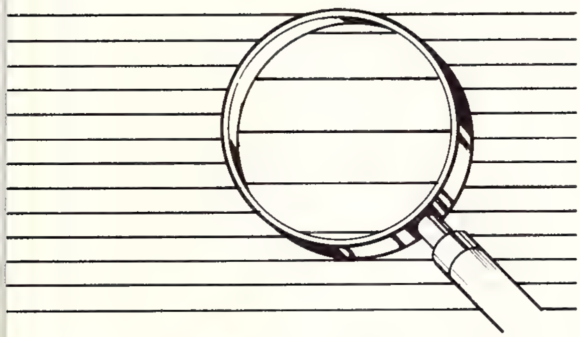
```
B6: (F0) [W9] +<<C:\123FILES\MFT2.WK1>>B6
Type  X  A  B  C  D  E  F  Reset  View  Save  Options  Name  [illegible]  Quit
Set all data ranges at once
                         Graph Settings
 Type: Bar                Titles: First  Manufacturing Projections
                                  Second Base Case
 X: B5..M5                        X axis
 A: B6..M6                        Y axis
 B: B7..M7
 C: B8..M8                                 Y scale:      X scale:
 D:                               Scaling  Automatic     Automatic
 E:                               Lower
 F:                               Upper
                                  Format   (6)           (6)
 Grid: Horizontal   Color: Yes    Indicator Yes          Yes

   Legend:               Format:  Data labels            Skip: 1
 A Widgets               Neither  [A] B6..M6
 B Gadgets               Neither  [A] B7..M7
 C Whizmos               Neither  [A] B8..M8
 D                       Neither
 E                       Neither
 F                       Neither
02-Aug-89  10:37 AM
```

Lotus 1-2-3, Release 2.2's "Settings Sheets" make it easier to set options for graphing and printing

By Michael Goodwin

Novell serves up the 386

One of the first network operating systems from the ground up for 80386, NetWare 386 3.0 combines easy installation with powerful support for up to 250 users



For years 3Com and Novell have been volleying back and forth on networking's central court, to the great benefit of the network user. Advanced NetWare 286 was widely considered the network operating system (NOS) of choice — until 3Com came out with 3+ Open, its implementation of Microsoft's LAN Manager. Now, with the third-quarter release of NetWare 386 3.0, Novell aims for a server ace.

Although most NOSs will run on an 80386 server, until now very few have been recoded from scratch to take full advantage of the chip's 32-bit capabilities. Novell is one of the first companies to do so, and its executives claim that NetWare 386 is three times faster than its predecessor — and will easily outperform LAN Manager-based NOSs like 3+ Open.

Furthermore, Novell's programmers have taken this opportunity to remedy problems (like Advanced NetWare 286's complex, time-consuming installation process) and add capabilities. For instance, NetWare 386 permits up to 250 users to be attached to a single server (via four network boards) without significant performance degradation — or so Novell claims. (While some NOSs have no official user limit, performance can degrade severely as the number of users grows. If Novell delivers acceptable 250-node operation, which it showed *US PC World* in its lab, NetWare 386 will set a new industry standard.)

Novell states that NetWare 386 can be installed in under 15 minutes — and although that estimate does not include placing network boards in workstations and the server, generating workstation shells, or configuring printers, *PC World* did succeed in bringing up the software, fully configured, in 10 minutes flat — without a manual.

The abbreviated, menu-driven installation process avoids several harsher aspects of NetWare 286: the overnight disk surface test, the tedious linking of board and disk drivers, and the necessity to reformat the entire hard disk for NetWare. With 3.0 you can leave a DOS partition on your hard disk, no linking is required, and surface testing is strictly optional (thanks to advanced error-handling techniques). You also can reconfigure the network without shutting it down.

In addition, you no longer need to guess at the right settings for parameters like disk cache buffers, directory cache buffers, and so on. The NOS optimises them automatically for changing levels of network activity.

Once NetWare 386 is up and running, you will notice that most of NetWare 286's familiar, menu-driven utilities for administration, print handling, and so on are still in place, looking and working much as they did before. But extra menu selections point to a number of significant new features.

For instance, NetWare 386 has been bolstered by numerous security options. The administrator can now limit the disk space users can have on the server and control access to individual files. Unauthorised applications can be kept from running on the server. Password encryption can prevent network "sniffers" from discovering passwords.

And that is not all. NetWare 386 lets you install network volumes as large as your hard disk. (In fact, volumes can even span multiple disks.) Unless you want a file zapped permanently for security reasons, deleted files will be automatically retained for possible undeletion (with an easy-to-use Salvage utility) as long as sufficient disk space is available. Moreover, NetWare 286 workstation shells will still work with NetWare 386, and security and user information can be transferred intact.

All software that runs on NetWare 286 will run on the new platform. The NetWare 386 server can be any 386 machine with 2Mb of memory and a healthy amount of disk storage. The software handles both DOS and OS/2 workstations, and Novell expects it to take no more workstation memory than does NetWare 286 — the least gluttonous memory hog among the major network players.

Novell plans to release NetWare 386 3.1 in early 1990, with simultaneous support for multiple transport protocols. The NOS will not provide global name services, however, until late next year.

At $US7995, NetWare 386 costs more than twice as much as its predecessor and most rivals. But Novell has addressed virtually every problem in the justly popular NetWare 286 — and slammed the ball back onto 3Com's side of the net.

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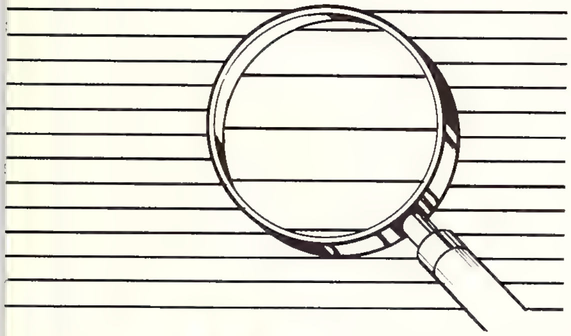
By Michael Miller

Utilities make up for Windows shortcomings



Microsoft Windows has received a lot of attention lately as more Windows-based applications have been announced. But for Windows to really succeed as an operating environment, it will need more than just a full-function word processor. It will have to have better memory management and font handling, and the kind of utilities and accessories that MS-DOS and Macintosh users are used to.

Memory management and font handling may be the province of Microsoft, but third-party developers can help alleviate the accessory problem. While Windows comes with a basic notepad, calculator, and cardfile, some recent sets of accessories can make it easier to use.

Okna Corp's Desktop Set is one such set of accessories — a more advanced calculator, calendar, phone book, dialler, and file viewer. The Desktop Set can be set so that each time you start Windows, a "Desktop" menu will be added to the MS-DOS Executive. The five utilities are installed under this menu.

Probably the most important accessory is the phone book, which is disk-based so you can have as many records as you like. You can set up multiple phone books, each with its own "cover" — complete with type and colour. The main phone book consists of a name and phone number, but each can be attached to an "index card" of more detailed business or residential information, including the address, and so on.

You can also create notes and attach them using any Windows-based word processor, though I suspect most people will continue to use the default notepad. You can have the computer dial numbers entered in the phone book, and Desktop Set's phone dialler can keep a log of how long you talk, which is particularly useful for consultants and others who bill by the hour. In addition, the phone dialler comes with a list of area codes.

The calendar is disk-based, so you are not limited in the number of appointments you can enter, and it automatically highlights major holidays.

With a $50 list price, the Desktop Set could be a bargain, even if all you use is the calendar and the phone book. The package is available now from Allware, (02) 85 2133.

WINDOWS MANAGER

HDC Windows Manager takes a difficult approach to utilities. This package includes both a series of "microapps" — the equivalent of Mac desktop accessories ? and a method of managing these applications.

The Windows Manager can be run as its own application or installed so that it is a part of each window on the desktop, in the upper left-hand corner.

The individual utilities that come with HDC Windows Manager are very simple, but still quite useful. A memory utility shows you a pie or bar chart that breaks down the amount of memory taken up by the various things loaded (such as DOS, Windows, any utilities, and open applications), although it cannot detail use of EMS memory. A "desktop" utility lets you set a background pattern for Windows, set an effect at startup (such as moving a picture on the background from left to right), and set a screen saver of a moving picture, polygons, or rocks. A font viewer lets you see what both screen and printer fonts look like. The alarm clock is quite simple but seems to work.

HDC Windows Manager is not very complicated, but many people will find it indispensable. It includes the kinds of things you wish came with Windows in the first place. The $170 package is now available from Solutions, (075) 395 422.

In short, Windows may not have everything you want yet, but it is well on its way. PC

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By *Ira Johnsen*

Ashton-Tate suffers financial strains

But Australian office barely affected

The Australian subsidiary of Ashton-Tate is keeping its chin up in the wake of recent lay offs and financial strains in the company's US offices.

Being the number three subsidiary in terms of revenue, Ashton-Tate Pty Ltd has barely felt the financial stress its parent has been dealing with. In fact, while 320 staff were receiving their walking papers in the US, the Australian contingency was doubling its staff for the second time in only a year. Glenn Miller, marketing and national sales manager of the Australian subsidiary, said the operation here is a top performer for the company and there were no cutbacks. "We've been asked to keep an eye on our budgets, but we've not had to cut back at all," he said. The total number of staff in Australia has recently reached 30. The parent company has had its share of knocks during the past year, culminating recently with the resignation of president Luther Nussbaum. Earlier in the year the company received a lot of bad press because of the dBase IV delay and subsequent bugs found. Many large corporations are not moving to dBase IV until release 1.1 is out because of the expense of upgrading. This has affected the revenue of the company — another thorn in its side along with the drop of share prices. Some observers said that Ashton-Tate will have to begin shipping version 1.1, which will work with SQL Server, by the end of the year in order to stay competitive with rivals like Borland International's Paradox. When discussing the number of staff laid off, Miller said "more is not necessarily better". Most of the 320 staff retrenched were from the development team and US sales division, Miller said. There were only a few from the international division. The dBase IV development team became a little top heavy in the rush to release the product, according to some sources. "Too many cooks spoil the broth," said one analyst

Chairman and chief executive officer, Ed Esber, has assumed day-to-day oversight of the development project and says he may continue in that role until the product ships. He has also sharply curtailed a number of development projects to focus Ashton-Tate's resources.

"We have rethought our priorities," Esber said. "Any nonstrategic products have been curtailed or eliminated." While he would not be specific on products that were cut, analysts estimate that spreadsheet and word processing packages are likely candidates.

ACI changes name

FERNTREE Computer Corporation Limited is the new name for Melbourne-based ACI Computer Services. The name change marks the end of a nine month transition from its previous owner, BTR-Nylex, to its current owners, a group of financial institutions including Citicorp Capital Investors, Partnership Pacific, HG Ventures and the NSW Superannuation Board. The existing management of the corporation was retained according to the company, but it has been restructured to ensure close identification of each of the five divisions of the company. Four of the five divisions will have name changes. The only one that will keep its name is well-known software and hardware distributor Sourceware. The former information services group has been renamed Ferntree Computer Services; PDS Computer Services, which provides payroll and personnel services, has been renamed Ferntree Payroll and Personnel; the business systems division is now Ferntree Computer Services; and banking and finance has become Ferntree Finance Systems. When Ferntree became an independent company it had an annual turnover of $100 million. McCann expects that figure to reach $400 million by 1995.

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No place to go

There were plenty of good computer exhibitions and conferences going on over the past fortnight, but, as Hewlett-Packard would say, the pilots' strike had "effected" my ability to get around the country. It was clearly a time to stay at home and get my facts wrong from there.

FOLD UP YOUR TENT

This was rather a pity, as I had hoped to speak to some laptop manufacturers about their new microlight-type products. The idea is to see which one can put a laptop, printer, modem, and fax into a briefcase-sized case. Equipped with an optional massive ego, this allows users to pretend they are working on planes, trains, or the Barrier Reef. Zenith has released its MinisPort here, and NEC's rival is pretty close, but the whole laptop market has been clouded by Tandy's design lawsuit against Toshiba over the folding screen found on virtually all laptops. More work for the baffled, but delighted, lawyers.

OIL CRISIS

You would think that IBM had mastered the art of making 120Mb disk drives — especially in its Japanese plant. But no. I hear that 15 per cent of the hard drives for the PS/2 Model 70/121 allow lubricant to seep onto the hard disk surface which can cause a failure to boot from the hard drive. Suspect customers, that is those who might suffer failures, are being contacted for replacement drives to be fitted.

PROCESS CONTROL

IBM now positions itself as the company with the leading-edge PC technology, such as the 486/25 Performance Platform. Look for IBM to announce soon that it will not be releasing a 33MHz 386 as the 486 is already more powerful. What it will not say is that its 33MHz 386 could not match the rest on power or price, and certainly not that the early models still cannot pass the US radio emission standards.

A ROMP IN THE HILLS

IBM's real processor work, on the RT Romp RISC chip, will soon pop up (if Tandy will allow me the phrase) in Steve Jobs' second-generation NeXT computer. The Romp-II processor is said to be a very powerful 25MHz version and the NeXT machine will include IBM's new graphics co-processor chip that implements both the Silicon Graphics 3D standard and Display PostScript in hardware. Technical people interested in the background to IBM's RISC project should pick up a copy of IBM's *Perspective on the 801 Risc computer*. I tried reading it, but came off at the first corner.

CUTTING IMPORTS

Microsoft Excel users will soon be able to import and manipulate dBase data through a Windows-based package called Q&E, which can create dynamic links between spreadsheet and database through Excel's DDE feature. But relax. It does not mean that you will have to use dBase IV, which is said to have been banned from use by NASA engineers at the Kennedy Space Centre in the US. The whole thing can be done from inside Excel, which has taken the step to protect itself against Borland's Quattro Professional, regarded as the star software of 1989.

THE SHEEP AND THE GOATS

The casualties of the PC technical war are beginning to speak out. One clone manufacturer has said that Intel's 33MHz 386 has "technical complications" and is therefore difficult to base a machine on. Intel says this is nonsense. Another clone manufacturer says that the first clone manufacturer simply is not up to the job of designing a 33MHz machine, with the more critical timing aspects. Intel says this sounds about right. Tandy may begin to say that it owns the word clone. Hewlett-Packard may employ people to man its stands at exhibitions. IBM and Compaq may reduce memory prices soon. Who can tell? With no aeroplanes available, it is a vast unknown quantity out there.

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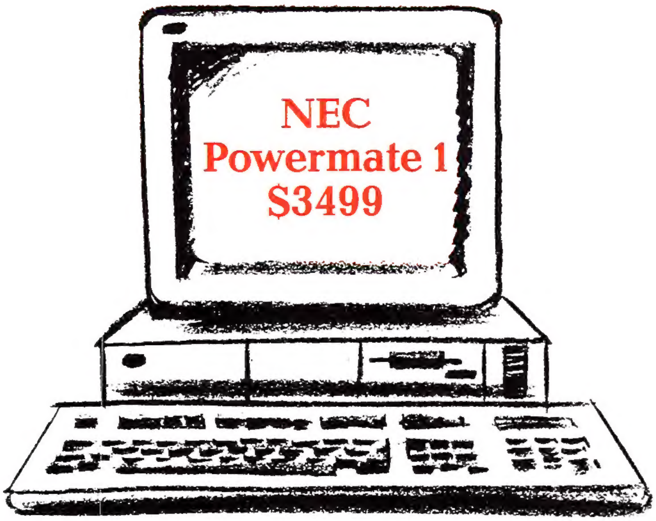

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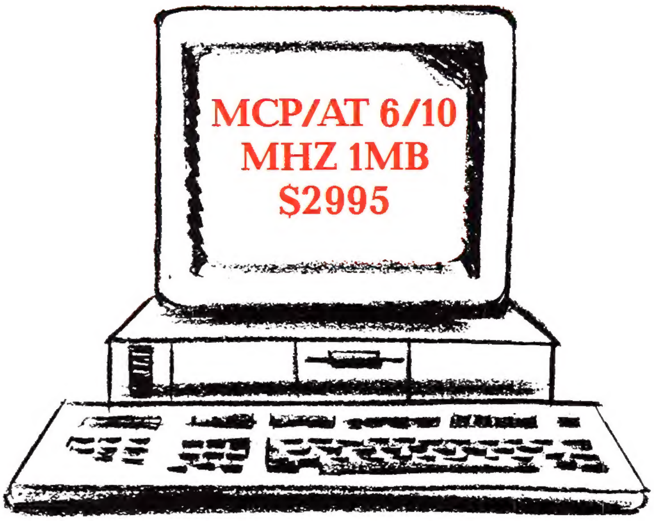

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